

Natural Resources Conservation Service In cooperation with United States Department of Interior, Bureau of Land Management and Bureau of Indian Affairs; and the New Mexico Agricultural Experiment Station

# Soil Survey of McKinley County Area, New Mexico, McKinley County and Parts of Cibola and San Juan Counties



# **How To Use This Soil Survey**

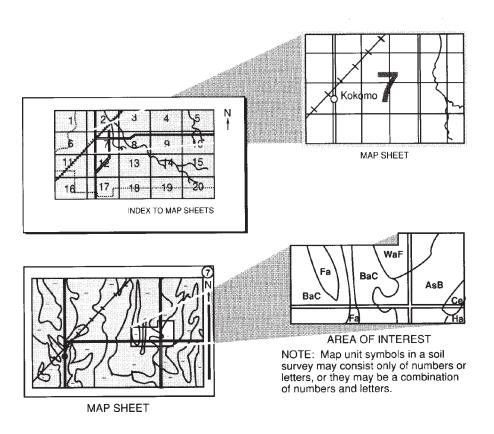
### **Detailed Soil Maps**

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in August 2000. Soil names and descriptions were approved in June 2001. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2001. This survey was made cooperatively by the Natural Resources Conservation Service and the United States Department of Interior, Bureau of Land Management and Bureau of Indian Affairs; and the New Mexico Agricultural Experiment Station.. The survey is part of the technical assistance furnished to the Cuba, Lava, McKinley, and San Juan Soil and Water Conservation Districts.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

The United States Department of Agriculture (USDA) prohibits discrimination in all of its programs on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice or TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue SW, Washington, DC 20250-9410, or call 202-720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Cover: Red Cliffs of Entrada Sandstone along I-40 north of Continental Divide, New Mexico.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is http://www.nrcs.usda.gov.

# **Contents**

How To Use This Soil Survey		55—Sparham clay loam, 0 to 2 percent	
Contents		slopes	35
Foreword		60—Redpen sandy clay loam, 0 to 2 percent	
General Nature of the Area		slopes	36
History of McKinley County, New Mexico		100—Norkiki-Kimnoli complex, 1 to 8 percent	
Climate		slopes	37
Geology		110—Benally-Fruitland association, 1 to 5	
Economic Resources		percent slopes	38
How This Survey Was Made		111—Yelives fine sandy loam, 1 to 3 percent	
Detailed Soil Map Units		slopes	39
8—Water	20	115—Razito-Shiprock complex, 3 to 8	
10—Tsosie-Councelor-Blancot fine sandy		percent slopes	40
loams, 1 to 3 percent slopes	20	116—Fajada-Huerfano-Benally complex,	
11—Doakum-Betonnie complex, 1 to 8		1 to 5 percent slopes	41
percent slopes	21	118—Farb-Chipeta-Rock outcrop complex,	
12—Calladito-Elias association, 1 to 6		2 to 30 percent slopes	43
percent slopes	22	120—Doak-Shiprock complex, 1 to 8	
13—Councelor-Calladito complex, 1 to 8		percent slopes	44
percent slopes	23	121—Badland	45
14—Councelor-Eslendo-Calladito complex,		122—Rock outcrop-Farb complex, 2 to 8	
2 to 25 percent slopes	25	percent slopes	45
16—Starlake clay, 1 to 3 percent slopes	26	125—Sanfeco fine sandy loam, 0 to 2	
22—Querencia-Lavodnas association,		percent slopes	46
2 to 15 percent slopes	27	130—Chipeta-Badland-Moncisco complex,	
30—Orlie-Tinian complex, 1 to 6 percent		2 to 45 percent slopes	47
slopes	28	150—Riverwash-Escawetter association,	
40-Nuffel silt loam, 0 to 2 percent slopes	29	0 to 1 percent slopes	48
42—Suwanee clay loam, 0 to 2 percent		160—Escawetter-Riverwash-Razito	
slopes	29	association, 0 to 5 percent slopes	49
44—Suwanee clay, 0 to 1 percent slopes		205—Penistaja-Tintero complex, 1 to 10	
45—Nutreeah clay loam, 0 to 2 percent		percent slopes	50
slopes	31	208—Marianolake fine sandy loam, 1 to 8	
47—Conchovar clay loam, 0 to 1 percent		percent slopes	51
slopes	31	210—Marianolake-Skyvillage complex,	
49—Concho clay loam, 0 to 2 percent slopes		1 to 8 percent slopes	51
51—Kwakina loamy fine sand, 0 to 2 percent		212—Rehobeth silty clay loam, 0 to 1	
slopes	32	percent slopes	53
52—Zuniven loamy fine sand, 0 to 2 percent		215—Viuda-Penistaja-Rock outcrop	
slopes	33	complex, 1 to 5 percent slopes	53
53—Hawaikuh clay loam, 0 to 2 percent		220—Hagerwest-Bond fine sandy loams,	
slopes	34	1 to 8 percent slopes	54
54—Venadito clay, saline, 0 to 2 percent	•	225—Aquima-Hawaikuh silt loams, 1 to 5	
slopes	35	percent slopes	55
•		·	

230—Sparank-San Mateo-Zia complex,		316—Royosa loamy fine sand, 1 to 15	
0 to 3 percent slopes	57	percent slopes	79
235—Notal-Hamburn complex, 0 to 2 percent		317—Highdye-Evpark-Bryway complex,	
slopes	58	2 to 20 percent slopes	80
240—Breadsprings and Nahodish soils,		320—Parkelei-Fraguni complex, 1 to 8	
0 to 2 percent slopes	60	percent slopes	81
241—Mentmore loam, 1 to 8 percent slopes		325—Venzuni silty clay, 1 to 3 percent	
242—Gish-Mentmore complex, 1 to 8		slopes	82
percent slopes	62	332—Evpark-Arabrab complex, 2 to 6	
244—Buckle fine sandy loam, 1 to 8 percent		percent slopes	83
slopes	64	335—Venadito clay, 1 to 3 percent slopes	
245—Buckle-Gapmesa-Barboncito complex,		336—Nuffel-Venadito complex, 1 to 3	
1 to 6 percent slopes	65	percent slopes	85
250—Hospah-Skyvillage-Rock outcrop		338—Zyme-Lockerby association, 5 to 35	
complex, 2 to 35 percent slopes	66	percent slopes	86
255—Farview-Rock outcrop complex,		345—Rock outcrop-Tuces complex, 20	
2 to 15 percent slopes	67	to 70 percent slopes	87
258—Eagleye-Atchee-Rock outcrop		350—Toldohn-Vessilla-Rock outcrop	
complex, 2 to 35 percent slopes	68	complex, 8 to 35 percent slopes	88
260—Quarries and Pits		351—Rock outcrop-Vessilla complex,	
261—Coal Mine Land		35 to 70 percent slopes	89
265—Uranium Mined Lands		352—Zia sandy loam, 1 to 5 percent	
270—Alesna-Rock outcrop complex,		slopes	90
15 to 55 percent slopes	70	353—Mido loamy fine sand, 1 to 6 percent	
275—Eldado gravelly fine sandy loam,		slopes	91
1 to 5 percent slopes	71	354—Knifehill loam, 1 to 5 percent slopes	
280—Azabache extremely gravelly clay		355—Rizno-Tekapo-Rock outcrop complex,	
loam, 2 to 8 percent slopes	71	2 to 45 percent slopes	92
290—Rock outcrop-Westmion-Skyvillage		357—Heshotauthla clay, 0 to 1 percent	
complex, 30 to 80 percent slopes	72	slopes	93
291—Rock outcrop-Eagleye-Atchee complex,		360—Hosta-Concho association, 0 to 5	
35 to 70 percent slopes	73	percent slopes	94
300—Regracic gravelly sandy clay loam,		361—Monpark silty clay, 2 to 8 percent	
2 to 6 percent slopes	74	slopes	95
305—Celavar-Atarque complex, 1 to 8		365—Vessilla-Rock outcrop complex, 2	
percent slopes	75	to 15 percent slopes	96
308—Fikel-Venzuni complex, 1 to 6 percent		366—Bosonoak loam, 1 to 5 percent slopes	
slopes	76	367—Chunkmonk very gravelly fine sandy	-
310—Parkelei sandy loam, 1 to 8 percent		loam, 2 to 10 percent slopes	97
slopes	77	368—Simitarq-Celavar sandy loams, 2 to	•
312—Bluewater loam, 0 to 1 percent slopes		8 percent slopes	98
315—Flugle-Fragua complex, 1 to 10 percent	· <del>·</del>	375—Todest-Shadilto complex, 2 to 8	
slopes	78	percent slopes	99
Is	-	L	- •

376—Todest fine sandy loam, 2 to 8 percent	425—Montillo-Canoneros complex, 2 to 6	
slopes 100	percent slopes	123
380—Berryhill-Casamero clays, 2 to 10	430—Montillo gravelly loam, 2 to 6 percent	
percent slopes 101	slopes	124
385—Mcorreon-Rock outcrop complex,	435—Tsoodzil-Amcec association, 5 to 50	
10 to 40 percent slopes 102	percent slopes	125
390—Banquito very fine sandy loam, 1 to	440—Chivato clay, 0 to 1 percent slopes	126
3 percent slopes 102	525—Silcat clay loam, 1 to 10 percent	
395—Cabezon-Mcorreon complex, 2 to 8	slopes	126
percent slopes 103	550—Bryway-Galzuni loams, 1 to 8 percent	
400—Shoemaker-Stozuni complex, 2 to 8	slopes	128
percent slopes 104	555—Parkelei-Evpark fine sandy loams,	
403—Valnor-Techado complex, 2 to 25	2 to 8 percent slopes	129
percent slopes 105	560—Flugle-Teczuni complex, 1 to 5	
404—Rock outcrop-Techado-Stozuni	percent slopes	130
complex, 5 to 60 percent slopes 106	561—Flugle-Plumasano association, 2 to 8	
405—Fortwingate-Owlrock complex, 2 to	percent slopes	131
8 percent slopes 107	565—Plumasano-Rock outcrop complex,	
406—Polich silt loam, 0 to 3 percent slopes 108	15 to 40 percent slopes	132
407—Cinnadale-Heckly association, 5 to	566—Bamac extremely gravelly sandy	
40 percent slopes 110	loam, 5 to 50 percent slopes	133
408—Mirabal-Zuni complex, 1 to 40 percent	575—Ramah-Pescado association, 1 to 8	
slopes 111	percent slopes	133
409—Rauster-Rock outcrop complex,	Use and Management of the Soils	
5 to 35 percent slopes 112	Interpretive Ratings	135
410—Montillo-Tsoodzil complex, 5 to 35	Rating Class Terms	135
percent slopes 112	Numerical Ratings	135
411—Ligocki-Robolata complex, 1 to 5	Prime Farmland and Farmland of	
percent slopes 113	Statewide and Local Importance	135
412—Rock outcrop-Rionutria-Zaster	Crops and Pasture	136
association, 15 to 80 percent slopes 115	Rangeland	138
413—Morclay silty clay, 1 to 5 percent	Forest Productivity and Management	139
slopes 116	Windbreaks and Environmental Plantings	141
414—Zunalei-Corzuni loamy fine sands,	Recreation	142
2 to 10 percent slopes 117	Wildlife Habitat	143
415—Tsoodzil-Rubble land complex,	Engineering	144
10 to 55 percent slopes 118	Construction Materials	147
416—Rock outcrop-Bluesky complex,	Soil Properties	151
5 to 80 percent slopes 119	Engineering Index Properties	151
418—Asaayi-Osoridge complex, 2 to 15	Physical Properties	152
percent slopes 120	Chemical Properties	153
419—Fortwingate-Cinnadale-Rock outcrop	Soil Features	
complex, 5 to 45 percent slopes 121	Water Features	
420—Seco clay loam, 1 to 5 percent slopes 122	Classification of the Soils	157

Soil Series and Their Morphology	157	Fajada Series	195
Alesna Series	157	Farb Series	196
Amcec Series	159	Farview Series	197
Aquima Series	160	Fikel Series	197
Arabrab Series	161	Flugle Series	198
Asaayi Series	162	Fortwingate Series	199
Atarque Series	163	Fragua Series	200
Atchee Series	163	Fraguni Series	201
Azabache Series	164	Fruitland Series	202
Bamac Series	165	Galzuni Series	202
Banquito Series	166	Gapmesa Series	203
Barboncito Series	167	Gish Series	204
Benally Series	168	Hagerwest Series	205
Berryhill Series	169	Hamburn Series	206
Betonnie Series		Hawaikuh Series	207
Blancot Series	171	Heckly Series	208
Bluesky Series	172	Heshotauthla Series	
Bluewater Series	172	Highdye Series	
Bond Series	174	Hospah Series	
Bosonoak Series	174	Hosta Series	
Breadsprings Series	175	Huerfano Series	212
Bryway Series	176	Kimnoli Series	212
Buckle Series		Knifehill Series	213
Cabezon Series	178	Kwakina Series	214
Calladito Series	179	Lavodnas Series	215
Canoneros Series	179	Ligocki Series	215
Casamero Series	180	Lockerby Series	216
Celavar Series	181	Marianolake Series	
Chipeta Series	182	Mcorreon Series	218
Chivato Series	182	Mentmore Series	219
Chunkmonk Series	183	Mido Series	220
Cinnadale Series	184	Mirabal Series	220
Concho Series	185	Moncisco Series	221
Conchovar Series	186	Monpark Series	222
Corzuni Series	187	Montillo Series	
Councelor Series	188	Morclay Series	224
Doak Series	188	Nahodish Series	225
Doakum Series	189	Norkiki Series	226
Eagleye Series	190	Notal Series	226
Eldado Series	191	Nuffel Series	227
Elias Series	192	Nutreeah Series	228
Escawetter Series	193	Orlie Series	229
Eslendo Series	194	Osoridge Series	230
Evpark Series	194	Owlrock Series	231

Parkelei Series2	232	Viuda Series	268
Penistaja Series		Westmion Series	268
Pescado Series		Yelives Series	
Plumasano Series		Zaster Series	270
Polich Series		Zia Series	
Querencia Series	236	Zunalei Series	271
Ramah Series	237	Zuni Series	272
Rauster Series	238	Zuniven Series	273
Razito Series	238	Zyme Series	274
Redpen Series2	239	Formation of the Soils	
Regracic Series2		Factors of Soil Formation	
Rehobeth Series2		Parent Material	281
Rionutria Series2	243	Climate	281
Rizno Series2	243	Plant and Animal Life	282
Robolata Series2	244	Topography	282
Royosa Series2	245	Time	
San Mateo Series		Landforms of the Survey Area	282
Sanfeco Series 2	246	Alluvial Fans	
Seco Series2	247	Drainageways	283
Shadilto Series2	248	Dunes	283
Shiprock Series2	249	Escarpments	283
Shoemaker Series2		Fan Remnants	
Silcat Series2	251	Flood Plains	284
Simitarq Series2	252	Hills and Mountains	284
Skyvillage Series 2	252	Hogbacks	285
Sparank Series2	253	Lava Plateaus	285
Sparham Series 2	254	Mesas and Cuestas	285
Starlake Series2	254	Plateaus	285
Stozuni Series2	256	Ridges	286
Suwanee Series 2	256	Stream Terraces	286
Techado Series	257	Valley floors	287
Teczuni Series	258	Valley sides	287
Tekapo Series2	258	Volcanic Cones	287
Tinian Series2	259	References	289
Tintero Series	260	Glossary	291
Todest Series	261	Tables	301
Toldohn Series	262	Table 1.—Temperature and Precipitation	
Tsoodzil Series	262	Table 2.—Freeze Dates in Spring and Fall	305
Tsosie Series	263	Table 3.—Growing Season	308
Tuces Series	264	Table 4.—Acreage and Proportionate Extent of	the
Valnor Series	265	Soils	310
Venadito Series	265	Table 5.—Land Capability for Irrigated Land	
Venzuni Series2		and Yields Per Acre of Crops and	
Vessilla Series	267	Pasture	314

Table 6.—Rangeland Productivity and	Table 12a.—Construction Materials	501
Characteristic Plant Communities 316	Table 12b.—Construction Materials	520
Table 7.—Forest Productivity 353	Table 13.—Water Management	548
Table 8a.—Forestland Management	Table 14.—Engineering Index Properties	572
Table 8b.—Forestland Management 363	Table 15.—Physical Properties of the Soils	602
Table 9a.—Recreation	Table 16.—Chemical Properties of the	
Table 9b.—Recreation	Soils	625
Table 10a.—Building Site Development 413	Table 17.—Soil Features	648
Table 10b.—Building Site Development 434	Table 18.—Water Features	659
Table 11a.—Sanitary Facilities 458	Table 19.—Classification of the Soils	679
Table 11b.—Sanitary Facilities	NRCS Accessibility Statement	683

Issued 2005

### **Foreword**

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Rosendo Trevino III State Conservationist Natural Resources Conservation Service

# Soil Survey of McKinley County Area, New Mexico, McKinley County and Parts of Cibola and San Juan Counties

By Scott A. Zschetzsche, Natural Resources Conservation Service

Fieldwork by Scott A. Zschetzsche, Steven S. Park, Clarence E. Montoya, Clarence L. Chavez, Jon K. Melhus, and Joseph May, Natural Resources Conservation Service. Assisted by Joseph V. Chiaretti, Charles D. Hibner, Alan Johnson, Casey Latta, Woody Loftis, Kenneth F. Scheffe, Gerald Stratton, and Jesse F. Wood, Natural Resources Conservation Service temporary duty mappers.

Vegetative work by Robert Abercrombie, F. George Chavez, Richard Montoya, Brenda Simpson, and David Trujillo.

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with United States Department of Interior, Bureau of Land Management and Bureau of Indian Affairs; and the New Mexico Agricultural Experiment Station

### General Nature of the Area

The McKinley County soil survey covers the west-central part of New Mexico and borders Arizona on its extreme western edge (fig. 1). This progressive survey has a land area totaling 2,862,700 acres or 4,473 square miles; 2,717,363 acres are in McKinley County, 86,700 acres are in Cibola County; and 58,637 acres are in San Juan County. A nonprogressive soil survey known as the Zuni Mountain Area was released in July of 1967 (USDA, 1967). This earlier survey covers a part of the present survey. The present survey, however, updates this earlier survey and provides additional information and larger maps that show the soils in greater detail.

In 2000, McKinley County had a population of about 66,923; and Gallup, the largest city in the survey area, had a population of 20,120. This area encompasses the Zuni Pueblo in the southwest part of the county and a small portion of the Navajo Reservation in the northwest.

Elevations in the survey area range from a low of about 6,100 feet in an area near the Zuni and Puerco Rivers to above 9,000 feet on Mesa Chivato north of Mt. Taylor. Most areas are at elevations of 6,300 to 8,000 feet.

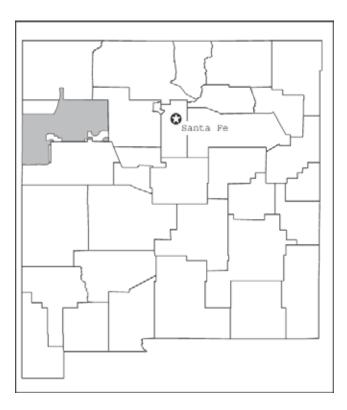


Figure 1.—Location of McKinley County Area in New Mexico.

The survey area is mainly rangeland within the Colorado Plateau physiographic province. It is characterized by rough, broken terrain, including steep mountainous areas, plateaus, cuestas, and mesas intermingled with steep canyon walls, escarpments, and valleys. The survey area has been subject to volcanic activity expressed as volcanic plugs, such as Cerro Alesna, and basalt-capped plateaus and mesas, such as Mesa Chivato.

The survey area has very little surface water. The major bodies of water are Bluewater and Ramah Lakes. Major watersheds are the Rio Puerco in the western part of the area, the Chaco river in the northern part, the Rio San Jose in the eastern part, and the Zuni river in the southwestern part of the survey.

Precipitation in the survey area varies with elevation. It ranges from about 8 inches at Chaco Canyon to over 18 inches in the Zuni Mountains.

Coal mining, commercial woodcutting, tourism, and ranching are the most important enterprises in the survey area. Uranium mining was a major commercial activity until the 1980's and could see a resurgence if demand and prices strengthen. The major coal mining area is centered northwest of Gallup, and a smaller operation exists north of San Mateo. The ranches are mainly cow-calf enterprises, but some are yearling operations. The survey area has few acres of irrigated cropland and non-irrigated cropland. Parts of the Zuni Pueblo and Ramah valley are used for irrigated pasture. The main crops are alfalfa hay and winter wheat. The main factors that restrict land use for crops are short growing season, low rainfall, and inadequate irrigation.

### **History of McKinley County, New Mexico**

Steve Lacy, geomorphologist, Natural Resources Conservation Service, prepared this section.

Paleo-Indian people were living in northwestern New Mexico over 12,000 years ago. These people lived the nomadic lifestyle of a hunting and gathering culture. Most of the evidence left behind by these people consists of Clovis, Folsom, and Eden stone points.

The Archaic period began around 6,000 to 8,000 years ago. Early in this period, the people retained the nomadic lifestyle. The climate of New Mexico began to change to warmer and dryer weather patterns. Sometime between 3,500 and 4,000 years ago, the introduction of cultivated crops from northern Mexico changed the way people lived. At first, the crops were only seasonally tended, and food gathering continued as before. By the period of 3,000 to 2,500 years ago, people were constructing food storage pits and pit

houses. They first built villages in forested settings, but eventually moved into lowland areas near river systems. Around 1,300 years ago, the populations had grown to the point that people began to occupy the open basin lands.

The Basin Classic period began with the movement into the open lowlands. The people now known as the Anasazi or Ancestral Puebloans first occupied the lower, drier elevations of northwestern and west-central New Mexico. They created small above-ground roomblocks formed from rock and adobe. Corn became the major food source, and the population grew rapidly. Pottery production was a major advance for this culture. The Chaco Culture rose with a period of massive pueblo building during a span from 900 to 1,050 years ago. Their influence covered an area of nearly 40,000 square miles. The Chaco phenomenon and the Basin Classic period ended around 850 years ago, possibly because of drought and resource depletion.

The Upland period began around 850 years ago and is distinguished by the reintroduction of pithouse villages. By 800 years ago, people had returned to building above-ground masonry pueblos. These villages were located at elevations up to 7,000 feet. Besides growing corn, people had also reverted to some hunting and gathering techniques for food acquisition. The Upland period lasted until around 700 years ago.

The Riverine period covers a time span from 700 years ago to the arrival of the Spanish in 1540. Pueblo village size increased along with a reliance on corn, beans, melons and squash. Villages were located along perennial water courses.

The Spanish presence in the McKinley County area began in 1539 when Fray Marcos de Niza and his slave, Esteban, reached the villages of Zuni. Francisco Vasquez de Coronado passed though Zuni in 1540 on his search for the fabled Cities of Cibola. By 1598, Juan de Onate led colonists into New Mexico. He spent time searching for economic mineral deposits in the Zuni Mountain region but was unsuccessful. Catholic priests established missions at the Zuni villages in 1630 and 1639.

The Navajo Indians moved into northwestern New Mexico sometime during the 16th century. The first recorded encounter was reported by Antonio de Espejo near Mount Taylor. The Navajo both traded with and raided the villages of the Pueblo people who occupied the area. Eventually, the Navajo spread westward and settled around the Colorado and Little Colorado rivers. Conflicts arose with Spanish settlers as they moved westward from the Rio Grande Valley.

Spanish land grants were given in 1767 and 1768 to

Ignacio Chavez, Felipe Tafoya, and Bartolome Fernandez. These grants were located on what would become the eastern part of McKinley County. The Cebolleta grant, issued in 1807, also occupied part of the eastern area of the future McKinley County.

American control of New Mexico began in 1846 with the commencement of the Mexican-American War. Several years after the end of the war, the United States Cavalry established Fort Wingate in 1849 to protect citizens from Indian attacks. In 1863, under the leadership of Kit Carson, the Army began a military campaign to round up the Navajo tribe and move it to a reservation at Bosque Redondo. The Navajo were kept at Bosque Redondo until 1868, when they were allowed to return to their homeland. A reservation was established, and Fort Wingate was relocated to be near the eastern boundary.

In 1880, the St. Louis and San Francisco Railroad Company began construction from Isleta to Arizona, after acquiring the land rights granted by the U.S. Congress to the bankrupt Atlantic and Pacific Railroad. Eventually, this line was acquired by the Santa Fe Railroad. The town of Gallup was established in 1881 and named after David Gallup, who was the paymaster for the railroad. The town was incorporated in 1891.

Logging in the Zuni Mountains began in the 1890's. Extensive cutting occurred from the 1900's through the 1940's. Ponderosa pine was the tree of choice for use as railroad ties. Ranching and farming have been ongoing operations since the late 1700's, but the number of people with farms and ranches increased greatly with the arrival of the American presence.

Other utilized economic resources of the area include coal, which has been mined for the railroads since the 1890's, and commercially mined since 1908. Uranium exploration boomed after 1950 when Paddy Martinez, a Navajo sheep rancher, found a strange-looking yellow rock. The development of the Ambrosia Lake district led to large-scale mining that continued until the crash of the uranium ore market in the 1980's.

McKinley County was established in 1899, when it was organized from portions of Bernalillo and Valencia counties. It was named for the 25th President of the United States, William McKinley.

### Climate

Prepared by the Natural Resources Conservation Service's National Water and Climate Center, Portland, Oregon.

Climate tables are created from climate stations McGaffey 5 SE, Thoreau 5 ENE, and Zuni, New Mexico. In the narrative below, precipitation information was also obtained from the mean annual precipitation map of New Mexico, which was developed for the NRCS using Oregon State University's PRISM climate mapping system.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station, Albuquerque, New Mexico.

Table 1 gives data on temperature and precipitation for the survey area as recorded at McGaffey (8,000 feet in elevation), Thoreau (7,100 feet), and Zuni (6,310 feet) in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season. In the narratives below the extremes are for the full period of record for each station, which is 1949 to 2000 at McGaffey and Zuni, and from 1953 to 1992 at Thoreau.

In winter, the average temperatures at McGaffey, Thoreau and Zuni are 25.5, 32.9, and 33.7 degrees F, and the average daily minimum temperatures are 10.0, 20.4 and 18.2 degrees, respectively. The lowest temperatures on record in these reporting periods are -32 at McGaffey on January 7, 1971; -20 at Thoreau on January 6, 1971; and -26 at Zuni, also on January 6, 1971.

In summer, the average temperatures are 60.7, 68.5 and 68.6 degrees at McGaffey, Thoreau and Zuni. The average daily maximum temperatures in summer are 78.0, 83.9, and 86.6 degrees, respectively. The highest temperatures ever recorded are 99 degrees at McGaffey on July 28, 1960; 99 at Thoreau on July 3, 1989; and 105 at Zuni on July 19, 1989.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Average annual total precipitation across the McKinley county soil survey area is somewhat variable, depending on elevation. In general, the northern and eastern portions of the survey area receive between 8 and 10 inches annually, and the western sections receive between 10 and 14 inches. The mountainous area along the Cibola county border receives between 18 and 22 inches per year. At McGaffey the average annual precipitation is about 20.33 inches, at Thoreau it is 11.05 inches, and at Zuni it is 12.88 inches. Of these amounts, about 40 percent usually falls in the May through September frost-free period. The growing season for most crops falls within this period. The heaviest 1-day rainfalls during these periods of record were 2.60 inches at McGaffey on

August 12, 1995; 2.00 inches at Thoreau on September 16, 1984; and 2.46 inches at Zuni on September 29, 1971. Thunderstorms occur on about 41 days each year, and most occur between May and September, with more than 22 in July and August.

The average seasonal snowfall also is quite dependent on elevation and location in this survey region. At McGaffey the average annual snowfall is 49.6 inches, whereas it is 32.4 inches at Thoreau and just 9.0 inches at Zuni. The greatest snow depths at any one time during the periods of record were 30 inches at McGaffey, recorded on January 31, 1997; 17 inches at Thoreau, recorded on January 16, 1987; and 14 inches at Zuni, recorded on March 11, 1969. On average, about 40 days per year have at least 1 inch of snow on the ground at McGaffey. At Thoreau, the average is about 28 days per year; and at Zuni, the average is just 3 days per year. The heaviest 1-day snowfalls on record were 22.0 inches at McGaffey, recorded on March 27, 1984; 15.0 inches at Thoreau, recorded on January 16,1987; and 13.0 inches at Zuni, recorded on February 11, 1963.

The average relative humidity in mid-afternoon is about 40 percent in the winter and between 15 and 20 percent in the summer. Humidity is higher at night, and the average at dawn is about 70 percent in the winter and 45 percent in the summer. The sun shines about 75 to 80 percent of the time in summer and around 65 to 70 percent in winter. The prevailing wind is from the northwest in the winter and early spring, and from the south and southeast the remainder of the year. Average wind speed is highest, around 12 miles per hour, in April.

### Geology

Steve Lacy, geomorphologist, prepared this section.

The geology and geomorphology of the McKinley County area include portions of the Datil and Navajo sections of the Colorado Plateau Province. The county lies in the southeastern portion of the Colorado Plateau Province and represents an area of transition between the Plateau, Rocky Mountain, and Basin and Range Provinces. Structurally, the area includes portions of the Chaco Slope dipping into the San Juan Basin, parts of the Chuska and Zuni mountain uplifts, the Zuni Basin, and the volcanic centers found on or near Mesa Chivato, located northeast of Grants. The Continental Divide enters the county from the northeast corner and exits through the Zuni Mountains south of Thoreau. Water on the west side of the divide drains though the Colorado River basin, and water on the east side drains through the Rio Grande. The county is guite scenic and has a varied topography and relief. The geology is mainly sedimentary rocks, but some igneous rocks can be found in the mountains and volcanic exposures.

### The Datil section

Two geomorphic regions are differentiated within the Datil section of the McKinley County area. The Datil section is characterized as an area of diverse features, with those of volcanic origin being most prominent.

The Mount Taylor Volcanic Center is centered in Cibola County. It consists of an 11,301-foot volcano that towers over a lava-capped mesa. The highest elevations in the McKinley County area occur in the southeast corner on Mesa Chivato. The volcanic necks rise to elevations exceeding 8,900 feet, with one feature rising over 9,000 feet. Mesa Chivato forms the pedestal under Mount Taylor. It is the remnant of the earliest pediment developed around the volcanic cone. The pediment surfaces were covered soon after formation by flows of basalt and andesite, and are generally younger than the flows from the cone itself. The mesa tops are studded with the eroded remains of the small cones from which the later lava flows poured. Some of the cones are in good condition, whereas others are severely eroded. The Mesa Chivato cones are clustered in groups along three rough arcs concave to the west, and are composed of basalt and scoria. Examples of soils formed from these volcanic materials are the Amcec and Montillo series.

The Zuni Uplift is a 75- to 85-mile-long structural rise. The Zunis consist of rolling uplands with local deepening around the margins of the central core of crystalline rocks. The northern end of the Zuni Mountains has been placed within the Datil Section by Fenneman (1931). He described the Zunis as belonging to the class of "domed mountains," similar to the Black Hills, formed by upward pressure from below. These mountains are rather distinct physiographically and do not readily fit within the characteristics of either the Datil or Navajo sections. Within the McKinley County area, Precambrian-aged core rocks are exposed near Page and McGaffey, and younger sedimentary rocks occur along the mountain flanks. These sedimentary rocks consist of sandstone, shale, and limestone units that range in age from Permian to Cretaceous (280 to 65 million years before present). The older rocks are found nearer the Precambrian core, and the younger rocks occur farther to the north and west. The Mirabal series is an example of a soil formed from the older rocks of the Precambrian core. The younger Owlrock and Zaster soils formed from limestone, and the Cinnadale soils formed in sandstone.

Lying along the northern edge of the Zuni Mountains

is a group of Mesozoic-aged sedimentary rocks that have been uplifted on the flanks of the rising Zunis. The surficial geology consists of Triassic, Jurassic, and Cretaceous-aged sandstone and shale formations. Some of the Triassic and Jurassic sandstone units form impressive cliffs and bluffs, especially in the area north of Interstate 40, from east of Gallup to around Prewitt. These bluffs are high enough in elevation so that Ponderosa pine trees can be found growing on north-facing exposures, giving rise to scenic vistas. The colors of the sandstones range from buff to red to white, and were deposited in near-shore and beach environments. Cross-bedding can be observed in some of the rock outcrops. Two soils associated with this area are the Flugle and Simitarq series.

### The Navajo section

Three geomorphic areas are differentiated within the Navajo section. These areas cover the western and northern sections of the county. It is mainly a country of sandstone with lesser amounts of shale. The rock units are generally not horizontal and have been subject to a great deal of erosion in an arid climate. Typical features include the mesa, cuesta, retreating escarpment, and dry washes.

The Zuni Basin lies to the west of the Zuni Mountains. The basin is somewhat flat-bottomed, and it lies between the Zuni and Defiance Uplifts. The basin is bounded by the Nutria and Defiance monoclines to the east and west, respectively. These monoclines are expressed as the hogback ridges seen near Gallup. The bedrock exposed in the basin mostly consists of Cretaceous-aged sandstones and shales, and seams of economically viable coal occur. Near the Arizona line and south of the Puerco River, there are some exposures of Jurassic and Triassic-aged sedimentary rocks. There are also extensive areas covered by Tertiary-aged alluvial and lacustrine sediments. Quaternary aged alluvium and bolson deposits are found from Zuni to the Arizona state line. Soils formed from the young Quaternary material are the Breadsprings and Nahodish series on the stream terraces of the Puerco River. Parkelei is an example of a soil that formed from the older geology on the higher landforms in the area.

The Defiance Uplift is a north-trending asymmetrical fold found mostly in eastern Arizona. It runs for nearly 100 miles and is generally 30 miles wide. The Chuska Mountains are formed on this uplift and are found in the northwest corner of the county. The Chuskas extend for 60 miles and consist of Tertiary-aged Chuska Sandstone with some exposures of Tertiary volcanics. Prominent cliffs bound most of the upland surfaces and are broken by canyons, which intrude into the

uplands. One interesting feature found in the Chuskas is the many lakes and swamps that partly fill rock basins. Most of these are not connected into the modern drainage. The lakes range in shape from nearly oval to highly irregular, and in size from less than 100 feet to more than a quarter of a mile. Water depth does not exceed 25 feet. The highest point in the range is Chuska Peak at 8,795 feet.

The Chaco Slope forms the most extensive structural feature in the McKinley County area. It is a somewhat arbitrarily defined structural subdivision of the larger San Juan Basin. It is formed by a strip of low, northerly, regional dip 110 miles in length and 30 to 40 miles in width, extending across the southern part of the San Juan Basin. The length is roughly parallel to the general strike of the slope, and the width is in the direction of the regional dip. The over-all regional dip is about 1 degree, and the structural relief is nearly 2,500 feet. Along the south side near the Zuni uplift, the dip is several degrees or more. In the northern portion, the beds are nearly horizontal. Near the contact where the Chaco Slope merges with the Central Basin, the dip again increases. The Cretaceous sediments consist of sandstones and shales and were deposited in coastal environments. The sandstones form more resistant features, whereas the shale weathers into rolling plains. Some common soils of the Chaco Slope are the Benally, Doak, and the Farb series.

### **Economic Resources**

Economic resources found in the McKinley County area include natural gas and petroleum production, mineral and coal mining, grazing, farming and tourism. Groundwater is scarce, and this is a growing concern for the communities found within this region.

### **How This Survey Was Made**

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other

living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior

of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

### **Map Unit Composition**

Soils in this survey area were mapped at two levels of detail. The detail of mapping in an area was selected based on the area's anticipated long term use.

At the most detailed level, map units are narrowly defined. Soil boundaries are plotted and verified at closely spaced intervals. Agricultural areas in the Rio Nutria Valley, Pescado, and the Zuni River Valley were mapped at this level of detail.

Most of the survey area is used as rangeland and mapping was performed at a less detailed level. The map units in this area are broadly defined. Soil boundaries were plotted and verified at widely spaced intervals. In general, these map units are less homogeneous and contain more included areas than the more detailed map units. These units are designed primarily for planning the management of large tracts of land as rangeland. The provide general information for more development, but the information should be used with caution. Onsite investigation is essential to provide the detail needed for planning intensive land uses.

## **Detailed Soil Map Units**

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Suwanee clay, 0 to 1 percent slopes, is a phase of the Suwanee series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Evpark-Arabrab complex, 2 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the

survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Escawetter-Riverwash-Razito Associaton, 0 to 5 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Breadsprings and Nahodish Soils, 0 to 2 percent slopes, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Badland is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

### 8—Water

These areas are covered with water in most years, at least during the period that is warm enough for plants to grow. Many areas are covered thoughout the year. Delineations mapped as water in the survey area are the Rio Nutria lakes and the northwest part of Bluewater lake.

# 10—Tsosie-Councelor-Blancot fine sandy loams, 1 to 3 percent slopes

### **Map Unit Setting**

MLRA: 37

Elevation: 6,400 to 6,800 feet (1,951 to 2,073 meters) Mean annual precipitation: 9 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 46 to 49 degrees F (8 to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Tsosie and similar soils: 35 percent Councelor and similar soils: 30 percent Blancot and similar soils: 20 percent Minor components: 15 percent

### **Component Descriptions**

### **Tsosie soils**

Geomorphic position: Stream terraces on valley floors and alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 9.9 inches (high) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 20 SAR (moderately sodic)

Ecological site: Salt Flats

Present native vegetation: alkali sacaton, galleta, big sagebrush, fourwing saltbush, blue grama,

greasewood, mound saltbush, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 9N

### Typical Profile:

A—0 to 2 inches; fine sandy loam

C1—2 to 7 inches; fine sandy loam

C2-7 to 13 inches; silt loam

C3—13 to 35 inches; sandy clay loam

C4—35 to 47 inches; clay loam

Ck-47 to 65 inches; loam

### Councelor soils

Geomorphic position: Alluvial fans on valley sides and

stream terraces on valley floors

Parent material: Eolian material and fan and stream

alluvium derived from sandstone

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 8.5 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Sandy

Present native vegetation: Indian ricegrass, blue grama, big sagebrush, bottlebrush squirreltail, sand dropseed, spike dropseed, western wheatgrass, winterfat, Mormon tea

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

### Typical Profile:

A—0 to 2 inches; fine sandy loam C1—2 to 20 inches; fine sandy loam C2—20 to 47 inches; sandy loam C3—47 to 65 inches; silt loam

### **Blancot soils**

Geomorphic position: Fan remnants on valley sides Parent material: Fan alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 4.7 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (moderately sodic)

Ecological site: Loamy

Present native vegetation: big sagebrush, blue grama,

Indian ricegrass, galleta, alkali sacaton, bottlebrush squirreltail, fourwing saltbush,

rabbitbrush, sand dropseed, western wheatgrass,

winterfat, Mormon tea

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 9N

### Typical Profile:

A—0 to 3 inches; fine sandy loam Bt1—3 to 11 inches; clay loam

Bt2—11 to 16 inches; sandy clay loam

C1—16 to 37 inches; sandy loam C2—37 to 65 inches; loamy sand

### **Minor Components**

Starlake and similar soils

Composition: About 7 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sodic Slopes

### Riverwash

Composition: About 5 percent

Riverwash consists of unstable sand and silt that is reworked by water and wind so frequently that it supports little or no vegetation. Riverwash occurs in stream channels and is subject to frequent, brief periods of flooding from high intensity storms, July to November.

### Badland

Composition: About 3 percent
Badland is a miscellaneous area consisting of
exposed areas of raw shale that is essentially
denuded of vegetation. Seams and layers of
coal and porcelenite are also included. These
areas are highly dissected.

# 11—Doakum-Betonnie complex, 1 to 8 percent slopes

### Map Unit Setting

MLRA: 37

Elevation: 6,400 to 6,900 feet (1,951 to 2,103 meters)

Mean annual precipitation: 9 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Doakum and similar soils: 60 percent Betonnie and similar soils: 25 percent Minor components: 15 percent

### **Component Descriptions**

### Doakum soils

Geomorphic position: Sideslopes on ridges and hills, fan remnants on valley sides, dipslopes on cuestas, and summits on mesas

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.57 in/hr (moderate)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 1.0 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, Indian

ricegrass, big sagebrush, bottlebrush squirreltail, fourwing saltbush, galleta, sand dropseed, western wheatgrass, alkali sacaton, rabbitbrush, Mormon

tea, winterfat

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 9N

### Typical Profile:

A—0 to 2 inches; fine sandy loam Bt1—2 to 8 inches; sandy clay loam Bt2—8 to 13 inches; sandy clay loam Bt3—13 to 21 inches; sandy clay loam Bk1—21 to 42 inches; sandy clay loam Bk2—42 to 65 inches; sandy loam

### **Betonnie soils**

Geomorphic position: Sideslopes on ridges and hills, fan remnants on valley sides, dipslopes on cuestas, and summits on mesas

Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 1.98 in/hr (moderately rapid)

Available water capacity: About 5.9 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Sandy

Present native vegetation: Indian ricegrass, blue grama, sand dropseed, alkali sacaton, big sagebrush, bottlebrush squirreltail, fourwing

saltbush, needleandthread, spike dropseed, galleta, winterfat, Mormon tea Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6G

### Typical Profile:

A—0 to 3 inches; sandy loam Bt1—3 to 11 inches; sandy loam Bt2—11 to 21 inches; sandy loam Bk1—21 to 29 inches; loamy sand Bk2—29 to 45 inches; loamy sand Bk3—45 to 52 inches; loamy sand Btkb—52 to 60 inches; sandy loam

### **Minor Components**

### Badlands

Composition: About 5 percent

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included. These areas are highly dissected.

Starlake and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sodic Slopes

Calladito and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Ecological site: Deep Sands

# 12—Calladito-Elias association, 1 to 6 percent slopes

### Map Unit Setting

MLRA: 37

Elevation: 6,300 to 6,800 feet (1,920 to 2,073 meters)
Mean annual precipitation: 9 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Calladito and similar soils: 55 percent

Elias and similar soils: 30 percent Minor components: 15 percent

### **Component Descriptions**

### Calladito soils

Geomorphic position: Dunes on valley sides Parent material: Eolian material derived from

sandstone Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 6.00 in/hr (rapid)
Available water capacity: About 5.2 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Negligible

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Deep Sand

Present native vegetation: Indian ricegrass, galleta, sand dropseed, blue grama, sand sagebrush, broom snakeweed, Mormon tea, needleandthread

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 7

### Typical Profile:

A—0 to 2 inches; loamy fine sand C1—2 to 26 inches; loamy fine sand C2—26 to 65 inches; loamy fine sand

### Elias soils

Geomorphic position: Fan remnants on valley sides Parent material: Fan alluvium derived from sandstone and shale

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 5.9 inches (low)
Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 15 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 30 SAR (strongly sodic)

Ecological site: Sodic Slopes

Present native vegetation: alkali sacaton, galleta, blue grama, fourwing saltbush, greasewood, mound saltbush, western wheatgrass, big sagebrush,

shadscale saltbush, threeawn Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

E—0 to 1 inches; fine sandy loam Btn1—1 to 3 inches; sandy clay loam Btn2—3 to 10 inches; sandy clay loam Bkn1—10 to 18 inches; loamy fine sand Bkn2—18 to 33 inches; sandy clay loam Bkn3—33 to 65 inches; clay loam

### **Minor Components**

Starlake and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sodic Slopes

Blancot and similar soils

Composition: About 4 percent

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

### Badlands

Composition: About 3 percent

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included. These areas are highly dissected.

Tsosie and similar soils

Composition: About 3 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salt Flats

# 13—Councelor-Calladito complex, 1 to 8 percent slopes

### Map Unit Setting

MLRA: 37

Elevation: 6,300 to 6,800 feet (1,920 to 2,073 meters)

Mean annual precipitation: 9 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Councelor and similar soils: 60 percent Calladito and similar soils: 30 percent Minor components: 10 percent

### **Component Descriptions**

### Councelor soils

Geomorphic position: Stream terraces on valley floors

and alluvial fans on valley sides

Parent material: Eolian material and fan and stream alluvium derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: Indian ricegrass, blue grama, big sagebrush, bottlebrush squirreltail, sand dropseed, spike dropseed, western wheatgrass,

winterfat, Mormon tea Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

### Typical Profile:

A—0 to 2 inches; fine sandy loam C1—2 to 15 inches; fine sandy loam C2—15 to 19 inches; silty clay loam C3—19 to 42 inches; loamy fine sand

C4—42 to 55 inches; loam Btb—55 to 65 inches; loam

### Calladito soils

Geomorphic position: Dunes on valley floors and on

valley sides

Parent material: Eolian material derived from sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 6.00 in/hr (rapid)
Available water capacity: About 4.9 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Negligible

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Deep Sand

Present native vegetation: Indian ricegrass, galleta, sand dropseed, blue grama, sand sagebrush, broom snakeweed, Mormon tea, needleandthread

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 7

### Typical Profile:

A—0 to 3 inches; loamy fine sand C1—3 to 37 inches; loamy sand C2—37 to 65 inches; loamy fine sand

### **Minor Components**

Tsosie and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salt Flats

Doakum and similar soils

Composition: About 3 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

### Rock outcrop

Composition: About 1 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

Starlake and similar soils

Composition: About 1 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Sodic Slopes

# 14—Councelor-Eslendo-Calladito complex, 2 to 25 percent slopes

### **Map Unit Setting**

MLRA: 37

Elevation: 6,300 to 6,800 feet (1,920 to 2,073 meters)
Mean annual precipitation: 9 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 46 to 49 degrees F (8 to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Councelor and similar soils: 30 percent Eslendo and similar soils: 30 percent Calladito and similar soils: 25 percent Minor components: 15 percent

### **Component Descriptions**

### Councelor soils

Geomorphic position: Alluvial fans on valley sides Parent material: Eolian material and fan alluvium derived from sandstone

Slope: 2 to 10 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 8.3 inches (moderate) Shrink-swell potential: About 1.5 LEP (low)

Chilling Swell potential. About 1:0 LLI

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: Indian ricegrass, blue grama, big sagebrush, bottlebrush squirreltail, sand dropseed, spike dropseed, western wheatgrass, winterfat, Mormon tea

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 3

### Typical Profile:

A—0 to 4 inches; fine sandy loam C1—4 to 16 inches; fine sandy loam C2—16 to 65 inches; fine sandy loam

### Eslendo soils

Geomorphic position: Sideslopes on ridges and hills

Parent material: Slope alluvium over residuum derived from sandstone and shale

Slope: 2 to 25 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 2.1 inches (very low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Shallow

Present native vegetation: Indian ricegrass, New Mexico feathergrass, galleta, alkali sacaton, big sagebrush, blue grama, bottlebrush squirreltail, Mormon tea, fourwing saltbush, Bigelow's sagebrush, rabbitbrush, sand dropseed

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 2 inches; loam C—2 to 11 inches; clay loam Cr—11 inches; shale

### Calladito soils

Geomorphic position: Dunes on ridges and hills Parent material: Eolian material derived from sandstone

Slope: 2 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 6.00 in/hr (rapid)
Available water capacity: About 4.8 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Negligible

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Deep Sand

Present native vegetation: Indian ricegrass, galleta, sand dropseed, blue grama, sand sagebrush, broom snakeweed, Mormon tea, needleandthread

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 7

### Typical Profile:

A—0 to 3 inches; loamy fine sand C1—3 to 41 inches; loamy sand C2—41 to 65 inches; loamy fine sand

### **Minor Components**

### Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

### Tsosie and similar soils

Composition: About 4 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salt Flats

### Badlands

Composition: About 3 percent

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included. These areas are highly dissected.

### Blancot and similar soils

Composition: About 3 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

### 16—Starlake clay, 1 to 3 percent slopes

### **Map Unit Setting**

MLRA: 37

Elevation: 6,300 to 6,700 feet (1,920 to 2,042 meters) Mean annual precipitation: 9 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Starlake and similar soils: 85 percent Minor components: 15 percent

### **Component Descriptions**

### Starlake soils

Geomorphic position: Stream terraces on valley floors

and fan remnants on vallev sides

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 5.4 inches (low) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 15 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 30 SAR (strongly sodic)

Ecological site: Sodic Slopes

Present native vegetation: alkali sacaton, galleta, blue grama, fourwing saltbush, greasewood, mound saltbush, western wheatgrass, shadscale saltbush, threeawn

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

Btn1—0 to 3 inches; clay Btn2—3 to 12 inches; clay

Btknz1—12 to 20 inches; clay loam Btknz2—20 to 54 inches; clay Btknz3—54 to 65 inches; clay loam

### **Minor Components**

Blancot and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

### Tsosie and similar soils

Composition: About 4 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Salt Flats

Rock outcrop

Composition: About 3 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

Badlands

Composition: About 3 percent

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included. These areas are highly dissected.

# 22—Querencia-Lavodnas association, 2 to 15 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,600 to 7,200 feet (2,012 to 2,195 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Querencia and similar soils: 50 percent Lavodnas and similar soils: 35 percent

Minor components: 15 percent

### **Component Descriptions**

### Querencia soils

Geomorphic position: Drainageways and alluvial fans on valley sides

Parent material: Fan and slope alluvium derived from sandstone and shale

Slope: 2 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 11.7 inches (high) Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

iee

Runoff class: High

Calcium carbonate maximum: About 15 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, galleta, alkali sacaton, bottlebrush squirreltail, fourwing saltbush, winterfat, oneseed juniper, broom snakeweed, rabbitbrush, spineless horsebrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 8

Typical Profile:

A—0 to 2 inches; fine sandy loam Bw1—2 to 9 inches; clay loam Bw2—9 to 15 inches; clay loam Bk—15 to 65 inches; clay loam

### Lavodnas soils

Geomorphic position: Sideslopes and summits on ridges and hills

Parent material: Slope alluvium derived from shale

Slope: 2 to 15 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.8 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 25 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Shallow

Present native vegetation: winterfat, Indian ricegrass, alkali sacaton, galleta, needleandthread, blue grama, fourwing saltbush, western wheatgrass, Bigelow's sagebrush, Mormon tea, oneseed juniper, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 3 inches; loam By1—3 to 9 inches; clay loam By2—9 to 13 inches; clay Cr—13 inches; shale

### **Minor Components**

Zia and similar soils

Composition: About 5 percent

Slope: 2 to 5 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

San Mateo and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

Hagerwest and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

# 30—Orlie-Tinian complex, 1 to 6 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,800 to 7,500 feet (2,073 to 2,286 meters) Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Orlie and similar soils: 45 percent Tinian and similar soils: 40 percent Minor components: 15 percent

### **Component Descriptions**

### Orlie soils

Geomorphic position: Dipslopes on cuestas and

summits on mesas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.6 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: western wheatgrass, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, winterfat, broom snakeweed, muttongrass, rabbitbrush, spineless horsebrush,

oneseed juniper, twoneedle pinyon Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

### Typical Profile:

A-0 to 2 inches; fine sandy loam

BA—2 to 5 inches; loam Bt—5 to 15 inches; clay loam

Bk1—15 to 36 inches; sandy clay loam Bk2—36 to 50 inches; silty clay loam Bk3—50 to 62 inches; clay loam

### Tinian soils

Geomorphic position: Dipslopes on cuestas and

summits on mesas

Parent material: Slope alluvium derived from

sandstone and shale Slope: 1 to 6 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow

Available water capacity: About 4.8 inches (low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

reet

Runoff class: Medium

Calcium carbonate maximum: About 2 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: western wheatgrass, Indian ricegrass, big sagebrush, blue grama, bottlebrush

squirreltail, galleta, spineless horsebrush,

winterfat, muttongrass, oneseed juniper, twoneedle

Land capability (nonirrigated): 6c

Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 3 inches; very fine sandy loam

Bt1—3 to 8 inches; clay loam Bt2—8 to 19 inches; clay Btk-19 to 24 inches; clay loam 2R—24 inches; sandstone bedrock

### **Minor Components**

Atarque and similar soils

Composition: About 10 percent

Slope: 1 to 6 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

### 40—Nuffel silt loam, 0 to 2 percent slopes

### **Map Unit Setting**

MLRA:36

Elevation: 6,100 to 6,500 feet (1,859 to 1,981 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Nuffel and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

### **Nuffel soils**

Geomorphic position: Flood plains on valley floors Parent material: Alluvial material derived from siltstone

and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 11.8 inches (high) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, galleta, spike muhly, mat muhly, sand dropseed, spineless horsebrush

Land capability (irrigated): 4w Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 8

### Typical Profile:

A—0 to 2 inches; silt loam

C1—2 to 12 inches; silty clay loam C2—12 to 18 inches: silt loam C3—18 to 26 inches; silty clay loam C4—26 to 65 inches; silt loam

### **Minor Components**

Venadito and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey Bottomland

### 42—Suwanee clay loam, 0 to 2 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 6,500 feet (1,859 to 1,981 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Suwanee and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

### Suwanee soils

Geomorphic position: Flood plains on valley floors

Parent material: Alluvial material derived from sandstone, siltstone and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 11.8 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, galleta, spike muhly, mat muhly, sand dropseed, spineless horsebrush

Land capability (irrigated): 4w Land capability (nonirrigated): 6w Conservation Tree/Shrub Group: 8

### Typical Profile:

Ap—0 to 4 inches; clay loam C1—4 to 34 inches; clay loam C2—34 to 48 inches; silt loam C3—48 to 65 inches; clay loam

### **Minor Components**

Venadito and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey Bottomland

Nuffel and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

### 44—Suwanee clay, 0 to 1 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 6,500 feet (1,859 to 1,981 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Suwanee and similar soils: 90 percent

Minor components: 10 percent

### **Component Descriptions**

### Suwanee soils

Geomorphic position: Flood plains on valley floors Parent material: Alluvial material derived from

sandstone, siltstone, and shale

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow) Available water capacity: About 9.1 inches (high) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Clayey Bottomland

Present native vegetation: western wheatgrass, alkali sacaton, fourwing saltbush, galleta, blue grama, spike muhly, mat muhly, broom snakeweed,

rabbitbrush

Land capability (irrigated): 4w Land capability (nonirrigated): 6w Conservation Tree/Shrub Group: 4CK

### Typical Profile:

Ap—0 to 10 inches; clay C1—10 to 17 inches; clay C2—17 to 30 inches; clay loam C3—30 to 47 inches; sandy clay loam C4—47 to 65 inches; sandy loam

### **Minor Components**

Venadito and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey Bottomland Nuffel and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

# 45—Nutreeah clay loam, 0 to 2 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,600 to 7,000 feet (2,012 to 2,134 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Nutreeah and similar soils: 90 percent

Minor components: 10 percent

### **Component Descriptions**

### **Nutreeah soils**

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 9.7 inches (high) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: About 42 inches

Runoff class: High

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, needleandthread, winterfat, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, pingue hymenoxys, rabbitbrush

Land capability (irrigated): 3s Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CK

Typical Profile:

Ap-0 to 10 inches; clay loam

Bt—10 to 16 inches; clay loam Btk—16 to 24 inches; clay Btz—24 to 40 inches; clay C—40 to 65 inches; clay

### Minor Components

Sparham and similar soils

Composition: About 5 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Swale

Suwanee and similar soils

Composition: About 5 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

# 47—Conchovar clay loam, 0 to 1 percent slopes

### Map Unit Setting

*MLRA:* 36

Elevation: 6,600 to 6,800 feet (2,012 to 2,073 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Conchovar and similar soils: 90 percent

Minor components: 10 percent

### **Component Descriptions**

### Conchovar soils

Geomorphic position: Drainageways and stream

terraces on valley floors

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Somewhat poorly drained

Slowest permeability: About 0.06 in/hr (very slow)

Available water capacity: About 7.9 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: About 45 inches

Runoff class: Medium

Calcium carbonate maximum: About 1 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Salty Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, big sagebrush, blue grama, bottlebrush squirreltail, greasewood, inland

saltgrass, mat muhly, rabbitbrush

Land capability (irrigated): 3s Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 9W

### Typical Profile:

Ap1—0 to 3 inches; clay loam Ap2—3 to 9 inches; clay Btz—9 to 26 inches; clay BC—26 to 36 inches; clay Cg—36 to 54 inches; clay 2C—54 to 65 inches; sandy clay

### **Minor Components**

Concho and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

# 49—Concho clay loam, 0 to 2 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,600 to 6,800 feet (2,012 to 2,073 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Concho and similar soils: 85 percent Minor components: 15 percent

### **Component Descriptions**

### Concho soils

Geomorphic position: Drainageways and stream

terraces on valley floors

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 11.3 inches (high)

Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 3 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, needleandthread, winterfat, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, pingue hymenoxys, rabbitbrush

Land capability (irrigated): 3c Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

### Typical Profile:

Ap—0 to 4 inches; clay loam Btss—4 to 28 inches; clay loam Btkss—28 to 38 inches; clay Btkz—38 to 65 inches; clay loam

### **Minor Components**

Conchovar and similar soils

Composition: About 10 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salty Bottomland

Parkelei and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 51—Kwakina loamy fine sand, 0 to 2 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,000 to 7,300 feet (1,829 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimators)

Average annual air temperature: 49 to 53 degrees F (9 to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Kwakina and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

### Kwakina soils

Geomorphic position: Flood plains and stream terraces on valley floors and alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from sandstone

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 5.6 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Occasional

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Negligible

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 8 mmhos/cm (slightly saline)

Ecological site: Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, galleta, spike muhly, mat muhly, sand dropseed, spineless horsebrush

Land capability (irrigated): 4e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

### Typical Profile:

A—0 to 7 inches; loamy fine sand C1—7 to 11 inches; loamy fine sand C2—11 to 23 inches; fine sand C3—23 to 33 inches; fine sandy loam Ck—33 to 65 inches; loamy sand

### **Minor Components**

Dunes and similar soils

Composition: About 5 percent

Dunes are loose, windblown, generally sandy material, mostly bare of vegetation. Their characteristic shape is llow mounds, ridges, or hills. They are capable of movement from place to place.

Zia and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sandy

# 52—Zuniven loamy fine sand, 0 to 2 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,200 to 6,500 feet (1,890 to 1,981 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Zuniven and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

### **Zuniven soils**

Geomorphic position: Flood plains on valley floors (fig. 2)

Parent material: Stream alluvium derived from sandstone and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 8.9 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 3 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Woody Riparian

Present native vegetation: cottonwood, rush, willow

Land capability (irrigated): 4w Land capability (nonirrigated): 6w Conservation Tree/Shrub Group: 4

### Typical Profile:

A—0 to 12 inches; loamy fine sand C1—12 to 42 inches; silt loam C2—42 to 65 inches; loamy fine sand



Figure 2.—Typical landscape of Zuniven loamy fine sand, 0 to 2 percent slopes, in the foreground. The mesas and steep canyon walls in the background are common landscape features in the survey area.

### **Minor Components**

Suwanee and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

### 53—Hawaikuh clay loam, 0 to 2 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,000 to 6,900 feet (1,829 to 2,103 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Hawaikuh and similar soils: 80 percent

Minor components: 20 percent

### **Component Descriptions**

### Hawaikuh soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow) Available water capacity: About 10.4 inches (high) Shrink-swell potential: About 7.0 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike muhly, oneseed juniper

Land capability (irrigated): 3e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

### Typical Profile:

Ap—0 to 10 inches; clay loam Bt—10 to 24 inches; sandy clay Btk—24 to 32 inches; clay loam Bk1—32 to 42 inches; clay loam Bk2—42 to 65 inches; clay

### **Minor Components**

Aquima and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Loamy

Zia and similar soils

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60

nches

Drainage class: Somewhat excessively drained

Ecological site: Sandy

# 54—Venadito clay, saline, 0 to 2 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 6,300 feet (1,859 to 1,920 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 11 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Venadito and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

### Venadito soils

Geomorphic position: Swales, depressions, stream terraces, and flood plains on valley floors

Parent material: Stream alluvium derived from shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Slowest permeability: About 0.06 in/hr (very slow)
Available water capacity: About 6.2 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Occasional

Seasonal water table minimum depth: About 48 inches

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 8 mmhos/cm (moderately

saline)

Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Clayey Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, greasewood, inland saltgrass, mat muhly

Land capability (irrigated): 4w Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CC

Typical Profile:

Ap—0 to 5 inches; clay BCssz1—5 to 29 inches; clay

BCssz2—29 to 40 inches; sandy clay

Bz—40 to 65 inches; clay

### **Minor Components**

Suwanee and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

# 55—Sparham clay loam, 0 to 2 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,600 to 6,800 feet (2,012 to 2,073 meters)
Mean annual precipitation: 14 to 16 inches (356 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8 to 9 degrees C)

Frost-free period: 100 to 135 days

Map Unit Composition

Sparham and similar soils: 95 percent

Minor components: 5 percent

### **Component Descriptions**

### Sparham soils

Geomorphic position: Flood plains on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 2 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 9.2 inches (high) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Swale

Present native vegetation: western wheatgrass, blue grama, big sagebrush, muttongrass, rabbitbrush,

broom snakeweed, sedge Land capability (irrigated): 4w Land capability (nonirrigated): 6w Conservation Tree/Shrub Group: 4CC

### Typical Profile:

A—0 to 2 inches; clay loam

C1—2 to 14 inches; clay

C2—14 to 18 inches; sandy clay loam

C3—18 to 27 inches; clay

C4—27 to 31 inches; sandy clay loam

Cz-31 to 65 inches; clay

### **Minor Components**

Nutreeah and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

# 60—Redpen sandy clay loam, 0 to 2 percent slopes

### Map Unit Setting

MLRA:36

Elevation: 6,000 to 6,500 feet (1,829 to 1,981 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Redpen and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

### Redpen soils

Geomorphic position: Fan remnants on valley sides Parent material: Eolian and fan alluvium derived from sandstone and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 9.2 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, winterfat, sand dropseed, oneseed juniper, rabbitbrush

Land capability (irrigated): 3e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 8

### Typical Profile:

Ap—0 to 4 inches; sandy clay loam Btk—4 to 24 inches; sandy clay loam Bk1—24 to 52 inches; sandy clay loam Bk2-52 to 65 inches; clay loam

## **Minor Components**

Tintero and similar soils

Composition: About 5 percent

Slope: 1 to 2 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

Hawaikuh and similar soils

Composition: About 3 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Monpark and similar soils

Composition: About 2 percent

Slope: 0 to 2 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic) Drainage class: Well drained Ecological site: Clayey

## 100—Norkiki-Kimnoli complex, 1 to 8 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 6,000 to 6,800 feet (1,829 to 2,073 meters) Mean annual precipitation: 7 to 9 inches (178 to 229

millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

#### Map Unit Composition

Norkiki and similar soils: 45 percent Kimnoli and similar soils: 40 percent Minor components: 15 percent

#### **Component Descriptions**

## Norkiki soils

Geomorphic position: Dipslopes on cuestas and summits on mesas, ridges, and hills

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 3.8 inches (low) Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gvpsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: None

Ecological site: Sandy Loam Upland 5-8 P.z.

Present native vegetation: Indian ricegrass, galleta, Bigelow's sagebrush, New Mexico feathergrass, alkali sacaton, blue grama, Mormon tea, rabbitbrush, black grama, fourwing saltbush, shadscale saltbush, narrowleaf yucca, sand dropseed

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 10

#### Typical Profile:

A-0 to 3 inches; loamy sand

Bt1—3 to 13 inches; sandy clay loam Bt2—13 to 19 inches; sandy loam Btk—19 to 28 inches; sandy clay loam 2R—28 inches; sandstone bedrock

#### Kimnoli soils

Geomorphic position: Dipslopes on cuestas and summits on mesas, ridges, and hills

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 1 to 6 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 1.9 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 5 SAR (slightly sodic) Ecological site: Sandstone Upland 5-8" P.z.

Present native vegetation: Indian ricegrass, Bigelow's sagebrush, galleta, New Mexico feathergrass, black grama, blue grama, fourwing saltbush,

Mormon tea, sand dropseed, shadscale saltbush, sideoats grama, narrowleaf yucca Land capability (nonirrigated): 7s
Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; fine sandy loam Bt—2 to 7 inches; sandy loam Btk—7 to 14 inches; sandy clay loam 2R—14 inches; sandstone bedrock

#### **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Fajada and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

Shiprock and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy Upland

Small transverse dunes that formed perpendicular to the prevailing winds. These dunes are generally less than 15 feet wide and 200 feet long.

# 110—Benally-Fruitland association, 1 to 5 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters)

Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Benally and similar soils: 60 percent Fruitland and similar soils: 25 percent Minor components: 15 percent

#### **Component Descriptions**

## Benally soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 8.2 inches (moderate) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 30 SAR (strongly sodic) Ecological site: Loamy Upland (sodic) 5-8" P.z. Present native vegetation: alkali sacaton, mound saltbush, galleta, Indian ricegrass, blue grama, sand dropseed. shadscale saltbush

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 10

## Typical Profile:

E—0 to 2 inches; sandy clay loam Btn—2 to 9 inches; sandy clay loam Btkn—9 to 25 inches; sandy clay loam Bz—25 to 65 inches; sandy clay loam

#### Fruitland soils

Geomorphic position: Stream terraces on valley floors Parent material: Eolian material and stream alluvium derived from sandstone

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 1.98 in/hr (moderately rapid)

Available water capacity: About 6.5 inches (moderate) Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: Very low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Sandy Upland 5-8" P.z.

Present native vegetation: Indian ricegrass, blue grama, galleta, fourwing saltbush, winterfat, bottlebrush squirreltail, sand dropseed, broom snakeweed, rabbitbrush, sandhill muhly

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 5

### Typical Profile:

A—0 to 3 inches; loamy fine sand C1—3 to 10 inches; loamy fine sand C2—10 to 19 inches; loamy fine sand Ck1—19 to 29 inches; loamy fine sand Ck2—29 to 65 inches; fine sandy loam

#### **Minor Components**

Huerfano and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

Fajada and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

Razito and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained Ecological site: Sandy Upland

Small transverse dunes that formed perpendicular to the prevailing winds. These dunes are generally less than 15 feet wide and 200 feet long.

# 111—Yelives fine sandy loam, 1 to 3 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 5,400 to 6,100 feet (1,646 to 1,859 meters) Mean annual precipitation: 7 to 9 inches (178 to 229

millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Yelives and similar soils: 85 percent Minor components: 15 percent

## **Component Descriptions**

## Yelives soils

Geomorphic position: Alluvial fans on valley sides and

flood plains on valley floors

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 0.57 in/hr (moderate) Available water capacity: About 7.6 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Loamy Upland 5-8" P.z.

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, fourwing saltbush, sand dropseed, needleandthread, spike dropseed, winterfat, galleta, ring muhly, rabbitbrush, sand

sagebrush, spineless horsebrush Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 4

#### Typical Profile:

A—0 to 2 inches; fine sandy loam Ck1—2 to 12 inches; fine sandy loam

Ck2—12 to 30 inches; loam C1—30 to 41 inches; loam

C2—41 to 56 inches; loamy fine sand C3—56 to 80 inches; loamy fine sand

#### **Minor Components**

Hamburn and similar soils

Composition: About 6 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Saline Bottom

Notal and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Clay Loam Terrace (sodic)

Benally and similar soils

Composition: About 4 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

## 115—Razito-Shiprock complex, 3 to 8 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters) Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Razito and similar soils: 45 percent Shiprock and similar soils: 40 percent

Minor components: 15 percent

#### **Component Descriptions**

#### Razito soils

Geomorphic position: Dunes on valley sides, mesas,

and cuestas

Parent material: Eolian material derived from

sandstone

Slope: 3 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 6.00 in/hr (rapid) Available water capacity: About 4.1 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: Negligible

Calcium carbonate maximum: About 5 percent

Gvpsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Sandy Upland 5-8" P.z.

Present native vegetation: Indian ricegrass, Mormon tea, blue grama, galleta, sand dropseed, sandhill muhly, spike dropseed, broom snakeweed,

fourwing saltbush, giant dropseed, needleandthread, rabbitbrush, winterfat

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 7

#### Typical Profile:

A—0 to 4 inches; loamy sand C-4 to 34 inches; loamy sand Ck-34 to 65 inches; loamy sand

## Shiprock soils

Geomorphic position: Fan remnants on valley sides, summits on mesas, and dipslopes on cuestas Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope: 3 to 6 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (moderately sodic)

Ecological site: Sandy Loam Upland 5-8 P.z. Present native vegetation: Indian ricegrass, blue grama, galleta, fourwing saltbush, winterfat, bottlebrush squirreltail, sand dropseed, broom snakeweed, rabbitbrush, sandhill muhly

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 3

## Typical Profile:

A—0 to 3 inches; fine sandy loam Bt—3 to 15 inches; fine sandy loam Bk1—15 to 37 inches; fine sandy loam Bk2—37 to 60 inches; fine sandy loam

#### **Minor Components**

Doak and similar soils

Composition: About 7 percent

Slope: 3 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy Upland

Benally and similar soils

Composition: About 5 percent

Slope: 3 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

Farb and similar soils

Composition: About 3 percent

Slope: 3 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Sandstone Upland

# 116—Fajada-Huerfano-Benally complex, 1 to 5 percent slopes

## **Map Unit Setting**

MLRA: 37

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters)

Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

#### **Map Unit Composition**

Fajada and similar soils: 30 percent Huerfano and similar soils: 30 percent Benally and similar soils: 25 percent Minor components: 15 percent

#### **Component Descriptions**

## Fajada soils

Geomorphic position: Erosional terraces on dipslopes on cuestas and valley floors (fig. 3)

Parent material: Alluvial material derived from

sandstone and shale Slope: 1 to 5 percent

Surface fragments: About 20 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 2.3 inches (very low)

Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 15 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 16 mmhos/cm (moderately

saline)

Sodicity maximum: About 40 SAR (strongly sodic)
Ecological site: Loamy Upland (sodic) 5-8" P.z.
Present native vegetation: alkali sacaton, mound
saltbush, saltbush, galleta, Indian ricegrass, blue
grama, sand dropseed, shadscale saltbush

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

E—0 to 2 inches; gravelly sandy clay loam

Btkn1—2 to 6 inches; clay loam

Btkn2—6 to 12 inches; sandy clay loam Btknz—12 to 16 inches; sandy clay loam

Bkyz—16 to 28 inches; clay loam

2Cr-28 inches; shale

#### **Huerfano soils**

Geomorphic position: Erosional terraces on dipslopes

on cuestas and valley floors

Parent material: Alluvial material derived from

sandstone and shale Slope: 1 to 5 percent

Surface fragments: About 10 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.6 inches (very low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 16 mmhos/cm (moderately

saline)

Sodicity maximum: About 40 SAR (strongly sodic) Ecological site: Loamy Upland (sodic) 5-8" P.z. Present native vegetation: alkali sacaton, mound saltbush, galleta, Indian ricegrass, blue grama, sand dropseed, shadscale saltbush

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; loam

Btk-2 to 17 inches; clay loam

Cr-17 inches; shale

## Benally soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 1 to 3 percent

Depth to restrictive feature: 40 to 60 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 3.6 inches (low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 8 mmhos/cm (slightly saline)
Sodicity maximum: About 30 SAR (strongly sodic)
Ecological site: Loamy Upland (sodic) 5-8" P.z.
Present native vegetation: alkali sacaton, mound
saltbush, galleta, Indian ricegrass, blue grama,

sand dropseed, shadscale saltbush Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 9N

## Typical Profile:

A—0 to 2 inches; sandy clay loam Btn—2 to 18 inches; sandy clay loam Btkn—18 to 45 inches; sandy clay loam Cr—45 inches; shale

#### **Minor Components**

#### Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Razito and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained Ecological site: Sandy Upland

Farb and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Sandstone Upland



Figure 3.—Typical landscape of Fajada-Huerfano-Benally complex, 1 to 5 percent slopes. These sodium-affected soils are common on this landscape.

Small transverse dunes that formed perpendicular to the prevailing winds. These dunes are generally less than 15 feet wide and 200 feet long.

## 118—Farb-Chipeta-Rock outcrop complex, 2 to 30 percent slopes

## **Map Unit Setting**

MLRA: 37

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters)

Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Farb and similar soils: 35 percent Chipeta and similar soils: 30 percent

Rock outcrop: 25 percent Minor components: 10 percent

## **Component Descriptions**

#### Farb soils

Geomorphic position: Summits on hills and ridges and structural benches on escarpments

Parent material: Eolian material over residuum derived from sandstone

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to bedrock (lithic)

Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 1.1 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic) Ecological site: Sandstone Upland 5-8" P.z.

Present native vegetation: Indian ricegrass, Bigelow's sagebrush, galleta, New Mexico feathergrass, black grama, blue grama, Mormon tea, fourwing saltbush, sand dropseed, shadscale saltbush, sideoats grama, narrowleaf yucca

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10 Typical Profile:

A—0 to 2 inches; sandy loam C—2 to 9 inches; sandy loam 2R—9 inches; sandstone bedrock

#### Chipeta soils

Geomorphic position: Escarpments on cuestas and

mesas

Parent material: Slope alluvium and colluvium over

residuum derived from shale

Slope: 5 to 30 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.7 inches (very low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 10 percent

Salinity maximum: About 16 mmhos/cm (moderately

saline)

Sodicity maximum: About 13 SAR (moderately sodic)

Ecological site: Breaks 5-8" P.z.

Present native vegetation: mat saltbush, galleta,

Native American pipeweed, bottlebrush squirreltail,

bud sagebrush

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 2 inches; silty clay Cyz—2 to 12 inches; clay Cr—12 inches; shale

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

#### **Minor Components**

Badlands

Composition: About 5 percent

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included. These areas are highly dissected.

Razito and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained Ecological site: Sandy Upland

## 120—Doak-Shiprock complex, 1 to 8 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 5,800 to 6,800 feet (1,768 to 2,073 meters)

Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Doak and similar soils: 55 percent Shiprock and similar soils: 30 percent Minor components: 15 percent

## **Component Descriptions**

#### Doak soils

Geomorphic position: Fan remnants on valley sides, dipslopes on cuestas, and summits on mesas Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 8.3 inches

(moderate)

Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

1001

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Loamy Upland 5-8" P.z.

Present native vegetation: galleta, Indian ricegrass, fourwing saltbush, alkali sacaton, black grama, blue grama, bottlebrush squirreltail, rabbitbrush, winterfat, sand dropseed

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 4

## Typical Profile:

A—0 to 2 inches; fine sandy loam
Bt—2 to 8 inches; sandy clay loam
Btk—8 to 12 inches; sandy clay loam
Bk1—12 to 40 inches; sandy clay loam
Bk2—40 to 65 inches; sandy loam

#### Shiprock soils

Geomorphic position: Fan remnants on valley sides, dipslopes on cuestas, and summits on mesas Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 5 SAR (moderately sodic)
Ecological site: Sandy Loam Upland 5-8 P.z.
Present native vegetation: Indian ricegrass, blue
grama, galleta, fourwing saltbush, winterfat,
bottlebrush squirreltail, sand dropseed, broom

snakeweed, rabbitbrush, sandhill muhly

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 3

## Typical Profile:

A—0 to 4 inches; loamy fine sand Bt—4 to 18 inches; fine sandy loam Bk1—18 to 37 inches; fine sandy loam Bk2—37 to 65 inches; fine sandy loam

#### **Minor Components**

Razito and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Excessively drained Ecological site: Sandy Upland

Norkiki and similar soils

Composition: About 4 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Sandstone Upland

Huerfano and similar soils

Composition: About 3 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

Kimnoli and similar soils

Composition: About 3 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Sandstone Upland

## 121—Badland

#### **Map Unit Composition**

Badland: 95 percent

Minor components: 5 percent

## **Component Descriptions**

#### **Badland**

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included in some areas. These areas are highly dissected.

Geomorphic position: Ridges, hills, and escarpments Parent material: Unweathered to slightly weathered shale

Slope: 1 to 50 percent

Depth to restrictive feature: 0 to 2 inches to bedrock

(paralithic)

Drainage class: Somewhat excessively drained Available water capacity: About 0.2 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

reer

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 5 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 10 SAR (slightly sodic)

Land capability (nonirrigated): 8

#### **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

# 122—Rock outcrop-Farb complex, 2 to 8 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 6,600 to 6,800 feet (2,012 to 2,073

meters)

Mean annual precipitation: 7 to 9 inches (178 to 229

millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

#### **Map Unit Composition**

Rock outcrop: 45 percent

Farb and similar soils: 45 percent Minor components: 10 percent

#### **Component Descriptions**

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

#### Farb soils

Geomorphic position: Escarpments on cuestas and

Parent material: Eolian material over residuum derived from sandstone

Slope: 2 to 8 percent

Surface fragments: About 55 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 0.5 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic) Ecological site: Sandstone Upland 5-8" P.z.

Present native vegetation: Indian ricegrass, Bigelow's sagebrush, galleta, New Mexico feathergrass, black grama, blue grama, fourwing saltbush, Mormon tea, sand dropseed, shadscale saltbush, sideoats grama, narrowleaf yucca

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; very gravelly sandy loam

C—2 to 5 inches; sandy loam R—5 inches; sandstone bedrock

#### **Minor Components**

Chipeta and similar soils

Composition: About 10 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Breaks

# 125—Sanfeco fine sandy loam, 0 to 2 percent slopes

## **Map Unit Setting**

MLRA: 37

Elevation: 6,400 to 6,800 feet (1,951 to 2,073 meters) Mean annual precipitation: 7 to 9 inches (178 to 229

millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

#### **Map Unit Composition**

Sanfeco and similar soils: 75 percent Minor components: 25 percent

## **Component Descriptions**

#### Sanfeco soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow) Available water capacity: About 7.7 inches

(moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Loamy Terrace 5-8" P.z.

Present native vegetation: Indian ricegrass, fourwing saltbush, galleta, alkali sacaton, blue grama, bottlebrush squirreltail, sand dropseed, broom

snakeweed, globemallow Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 4K

## Typical Profile:

A—0 to 2 inches; fine sandy loam
Bt—2 to 10 inches; clay loam
Btk1—10 to 27 inches; clay
Btk2—27 to 35 inches; sandy clay
Btk3—35 to 39 inches; sandy clay loam
Bk—39 to 65 inches; loamy sand

#### **Minor Components**

Notal and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clay Loam Terrace

Hamburn and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Saline Bottom

#### Doak and similar soils

Composition: About 5 percent

Slope: 1 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy Upland

Small transverse dunes that formed perpendicular to the prevailing winds. These dunes are generally less than 15 feet wide and 200 feet long.

# 130—Chipeta-Badland-Moncisco complex, 2 to 45 percent slopes

#### **Map Unit Setting**

MLRA: 37

Elevation: 5,800 to 6,300 feet (1,768 to 1,920 meters) Mean annual precipitation: 7 to 9 inches (178 to 229

millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Chipeta and similar soils: 40 percent Badland and similar soils: 30 percent Moncisco and similar soils: 15 percent

Minor components: 15 percent

#### **Component Descriptions**

## Chipeta soils

Geomorphic position: Sideslopes on ridges and hills Parent material: Slope alluvium and colluvium over

residuum derived from shale

Slope: 5 to 35 percent

Surface fragments: About 45 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.0 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 5 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Breaks 5-8" P.z.

Present native vegetation: mat saltbush, galleta,

Native American pipeweed, bottlebrush squirreltail,

bud sagebrush

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 3 inches; very gravelly silt loam

Cy—3 to 6 inches; clay

Cr1—6 to 14 inches; weathered bedrock

Cr2-14 inches: shale

#### **Badland**

Badland is a miscellaneous area consisting of exposed areas of raw shale that is essentially denuded of vegetation. Seams and layers of coal and porcelenite are also included. These areas are highly dissected.

Geomorphic position: Hills and ridges

Slope: 0 to 50 percent

Depth to restrictive feature: 1 to 2 inches to bedrock

(paralithic)

Drainage class: Somewhat excessively drained Available water capacity: About 0.2 inches (very low)

Shrink-swell potential: About 7.0 LEP (high)

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 5 percent

Salinity maximum: About 4 mmhos/cm (moderately

saline)

Sodicity maximum: About 10 SAR (moderately sodic)

Land capability (nonirrigated): 8

#### Moncisco soils

Geomorphic position: Summits of ridges and hills Parent material: Eolian material from sandstone over residuum derived from porcelanite

Slope: 2 to 45 percent

Surface fragments: About 70 percent

Depth to restrictive feature: 10 to 20 inches to abrupt

textural change

Drainage class: Excessively drained

Slowest permeability: About 0.57 in/hr (moderate)

Available water capacity: About 0.5 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 20 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 8 mmhos/cm (slightly saline)

Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Porcelanite Hills 5-8" P.z.

Present native vegetation: alkali sacaton, shadscale saltbush, galleta, Indian ricegrass, bottlebrush

squirreltail, mound saltbush Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 3 inches; extremely channery sandy clay

Bk—3 to 13 inches; extremely channery sandy loam

Bcky—13 to 27 inches; fragmental material C1—27 to 39 inches; fragmental material C2—39 to 59 inches; fragmental material

#### **Minor Components**

Farb and similar soils

Composition: About 10 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Sandstone Upland

Fajada and similar soils

Composition: About 4 percent

Slope: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

## 150—Riverwash-Escawetter association, 0 to 1 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 6,900 feet (1,859 to 1,981 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Riverwash: 65 percent

Escawetter and similar soils: 25 percent

Minor components: 10 percent

## **Component Descriptions**

#### Riverwash

Riverwash consists of unstable sand and silt that is reworked by water and wind so frequently that it supports little or no vegetation. Riverwash occurs in stream channels and is subject to frequent, brief periods of flooding from high intensity storms, July to September.

Geomorphic position: Stream channels

Parent material: Alluvium from mixed sources

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Slowest permeability: About 20.00 in/hr (very rapid)

Available water capacity: About 1.2 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Frequent

Seasonal water table minimum depth: about 40 inches

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Land capability (nonirrigated): 8

#### Typical Profile:

C1—0 to 10 inches; extremely stony sand C2—10 to 80 inches; stratified coarse sand

#### **Escawetter soils**

Geomorphic position: Flood plains on valley floors Parent material: Stream alluvium derived from sandstone and shale

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained Slowest permeability: About 5.95 in/hr (rapid) Available water capacity: About 4.2 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Frequent

Seasonal water table minimum depth: About 40 inches

Runoff class: Negligible

Calcium carbonate maximum: About 2 percent

Gvpsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 0 SAR (nonsodic)
Ecological site: Sandy Bottomland (subirrigated)
Present native vegetation: alkali sacaton, inland
saltgrass, Indian ricegrass, saltcedar, sand
dropseed, western wheatgrass, Russian olive,
bottlebrush squirreltail

Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 7

#### Typical Profile:

AC-0 to 2 inches; loamy fine sand

C1—2 to 8 inches; stratified loamy fine sand

C2—8 to 25 inches; fine sand

C3—25 to 32 inches: stratified silt loam

C4—32 to 48 inches; fine sand

C5-48 to 65 inches; fine sand

## **Minor Components**

Escavada and similar soils

Composition: About 10 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sandy Bottomland

## 160—Escawetter-Riverwash-Razito association, 0 to 5 percent slopes

### **Map Unit Setting**

MLRA: 37

Elevation: 5,500 to 5,800 feet (1,676 to 1,768 meters)

Mean annual precipitation: 7 to 9 inches (178 to 229

millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Escawetter and similar soils: 40 percent

Riverwash: 35 percent

Razito and similar soils: 15 percent Minor components: 10 percent

## **Component Descriptions**

## **Escawetter soils**

Geomorphic position: Flood plains on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained Slowest permeability: About 5.95 in/hr (rapid) Available water capacity: About 3.6 inches (low) Shrink-swell potential: About 1.0 LEP (low)

Flooding hazard: Frequent

Seasonal water table minimum depth: About 40 inches

Runoff class: Negligible

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)
Ecological site: Sandy Bottom (subirrigated) 5-8" P.z.
Present native vegetation: alkali sacaton, inland

resent native vegetation: alkali sacaton, inland saltgrass, Indian ricegrass, saltcedar, sand dropseed, western wheatgrass, Russian olive,

bottlebrush squirreltail Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 7

Typical Profile:

C1-0 to 1 inches; fine sand

C2—1 to 7 inches: fine sand

C3-7 to 16 inches; stratified very fine sand and

silt

C4—16 to 22 inches; stratified very fine sand and

silt

C5—22 to 52 inches; fine sand C6—52 to 70 inches; coarse sand

#### Riverwash

Riverwash consists of unstable sand and silt that is reworked by water and wind so frequently that it supports little or no vegetation. Riverwash occurs in stream channels and is subject to frequent, brief periods of flooding from high intensity storms, July to September.

Geomorphic position: Flood plains on valley floors Parent material: Alluvium from mixed sources

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained Slowest permeability: About 5.95 in/hr (rapid)

Available water capacity: About 2.4 inches (very low)

Shrink-swell potential: About 0.0 LEP (low)

Flooding hazard: Very Frequent

Seasonal water table minimum depth: About 40 inches

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline

Sodicity maximum: About 5 SAR (slightly sodic)

Land capability (nonirrigated): 8

## Razito soils

Geomorphic position: Dunes on valley floors Parent material: Eolian material derived from

sandstone Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 5.95 in/hr (rapid)
Available water capacity: About 3.5 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very low

Calcium carbonate maximum: About 1 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Sandy Upland 5-8" P.z.

Present native vegetation: Indian ricegrass, Mormon

tea, blue grama, galleta, sand dropseed, sandhill muhly, spike dropseed, broom snakeweed, fourwing saltbush, giant dropseed, needleandthread, rabbitbrush, winterfat Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 7

Typical Profile:

AC—0 to 1 inches; fine sand

C-1 to 70 inches; stratified fine sand

#### **Minor Components**

Escavada and similar soils

Composition: About 10 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sandy Bottomland

## 205—Penistaja-Tintero complex, 1 to 10 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,200 to 7,100 feet (1,890 to 2,164 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

#### Map Unit Composition

Penistaja and similar soils: 45 percent Tintero and similar soils: 40 percent Minor components: 15 percent

#### **Component Descriptions**

#### Penistaja soils

Geomorphic position: Fan remnants on valley sides, dipslopes on cuestas, and summits on mesas Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, winterfat, sand dropseed, oneseed juniper, spineless horsebrush, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

#### Typical Profile:

A—0 to 3 inches; sandy loam Bt—3 to 19 inches; sandy clay loam Bk—19 to 65 inches; sandy loam

#### **Tintero soils**

Geomorphic position: Fan remnants on valley sides, dipslopes on cuestas, and summits on mesas Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope: 1 to 10 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 7.8 inches (moderate) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Sandy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, fourwing saltbush, sand dropseed, spike dropseed, winterfat, galleta, ring muhly, oneseed juniper, rabbitbrush, sand sagebrush, spineless horsebrush

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 3

#### Typical Profile:

A—0 to 4 inches; fine sandy loam Bt—4 to 16 inches; fine sandy loam Bk1—16 to 48 inches; fine sandy loam Bk2—48 to 65 inches; loamy fine sand

## **Minor Components**

Hagerwest and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Bond and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

Sparank and similar soils

Composition: About 5 percent

Slope: 0 to 5 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Clayey Bottomland

## 208—Marianolake fine sandy loam, 1 to 8 percent slopes

#### Map Unit Setting

MLRA: 36

Elevation: 6,200 to 7,300 feet (1,890 to 2,225 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Marianolake and similar soils: 85 percent

Minor components: 15 percent

## **Component Descriptions**

#### Marianolake soils

Geomorphic position: Drainageways and fan remnants

on valley sides

Parent material: Fan and slope alluvium derived from

sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 8.0 inches (moderate)

Shrink-swell potential: About 2.0 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

*Gypsum maximum:* About 1 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, winterfat, sand

dropseed, oneseed juniper, spineless horsebrush,

rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

Typical Profile:

A—0 to 2 inches; fine sandy loam

Bt1-2 to 8 inches; loam

Bt2—8 to 14 inches; clay loam

Bt3—14 to 24 inches; fine sandy loam Bk—24 to 39 inches; fine sandy loam

C-39 to 70 inches; loamy sand

#### **Minor Components**

Zia and similar soils

Composition: About 10 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

Nahodish and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salty Bottomland

## 210—Marianolake-Skyvillage complex, 1 to 8 percent slopes

#### **Map Unit Setting**

MLRA:36

Elevation: 6,400 to 7,000 feet (1,951 to 2,134 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9 to 12 degrees C)

Frost-free period: 120 to 140 days

#### **Map Unit Composition**

Marianolake and similar soils: 50 percent Skyvillage and similar soils: 30 percent Minor components: 20 percent

## **Component Descriptions**

#### Marianolake soils

Geomorphic position: Fan remnants on valley sides, summits on mesas, and dipslopes on cuestas Parent material: Fan and slope alluvium derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.5 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, winterfat, sand dropseed, spineless horsebrush, oneseed juniper, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

#### Typical Profile:

A—0 to 5 inches; fine sandy loam Bt—5 to 11 inches; sandy clay loam Btk—11 to 47 inches; clay loam Bk—47 to 65 inches; fine sandy loam

#### Skyvillage soils

Geomorphic position: Structural benches and summits on mesas, hills and ridges and dipslopes on cuestas

Parent material: Eolian material and slope alluvium derived from sandstone

Slope: 1 to 6 percent

Surface fragments: About 20 percent

Depth to restrictive feature: 5 to 20 inches to bedrock (lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 2.0 inches (very low)
Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Shallow Sandstone

Present native vegetation: Bigelow's sagebrush, blue grama, fourwing saltbush, galleta, Indian ricegrass, New Mexico feathergrass, little bluestem, shadscale saltbush, sideoats grama, winterfat, cliffrose, Mormon tea, oneseed juniper, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; channery sandy loam Bw1—2 to 5 inches; sandy loam Bw2—5 to 9 inches; sandy clay loam Bk—9 to 15 inches; sandy clay loam 2R—15 inches sandstone bedrock

#### **Minor Components**

Hagerwest and similar soils

Composition: About 10 percent

Slope: 1 to 6 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Loamy

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

#### Hospah and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Shale Hills

# 212—Rehobeth silty clay loam, 0 to 1 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,600 to 6,800 feet (2,012 to 2,073 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

#### **Map Unit Composition**

Rehobeth and similar soils: 90 percent

Minor components: 10 percent

Urban land

In the City of Gallup, components of this map unit are covered by buildings, parking lots, roads, and sidewalks. The percentage of Urban land ranges from less than 10 percent on the city's periphery to 60 percent in densely developed residential sections. There are also many areas that have been cut and filled with a variety of earthen materials or man-made soils.

#### **Component Descriptions**

#### Rehobeth soils

Geomorphic position: Flood plains and stream terraces on valley floors

on valley floors

Parent material: Stream alluvium derived from

gypsiferous shale Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.5 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Occasional Ponding hazard: Occasional

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 15 percent

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 13 SAR (moderately sodic)

Ecological site: Salty Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, black greasewood, blue grama, bottlebrush squirreltail, inland

saltgrass, mat muhly, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 2 inches; silty clay loam Bw—2 to 5 inches; silty clay loam

Bss—5 to 12 inches; clay Bssny1—12 to 18 inches; clay Bssny2—18 to 32 inches; clay Bssny3—32 to 80 inches; clay

#### **Minor Components**

Nuffel and similar soils

Composition: About 4 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Bottomland

Aquima and similar soils

Composition: About 3 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Zia and similar soils

Composition: About 3 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

# 215—Viuda-Penistaja-Rock outcrop complex, 1 to 5 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,700 to 7,000 feet (2,042 to 2,134 meters)
Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9 to 12 degrees C)

**Map Unit Composition** 

Frost-free period: 120 to 140 days

#### ,

Viuda and similar soils: 35 percent Penistaja and similar soils: 30 percent

Rock outcrop: 25 percent Minor components: 10 percent

## **Component Descriptions**

#### Viuda soils

Geomorphic position: Lava flows

Parent material: Eolian material and slope alluvium

derived from sandstone and basalt

Slope: 1 to 5 percent

Surface fragments: About 40 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 2.5 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Malpais

Present native vegetation: blue grama, galleta, alkali sacaton, hairy grama, sideoats grama, black grama, common wolfstail, fourwing saltbush, little

bluestem, spike muhly Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

Typical Profile:

A-0 to 3 inches; very cobbly fine sandy loam

Bt-3 to 15 inches; clay

Bk—15 to 17 inches; cobbly clay loam

2R—17 inches; basalt bedrock

## Penistaja soils

Geomorphic position: Drainageways on lava flows Parent material: Eolian and fan alluvium derived from

sandstone and shale Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 8.4 inches (moderate) Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, winterfat, sand dropseed, spineless horsebrush,

rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

Typical Profile:

A—0 to 2 inches; sandy loam Bt—2 to 22 inches; sandy clay loam Bk—22 to 65 inches; sandy clay loam

#### Rock outcrop

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Bond and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

Hagerwest and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

## 220—Hagerwest-Bond fine sandy loams, 1 to 8 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,500 to 7,200 feet (1,981 to 2,195 meters) Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Hagerwest and similar soils: 50 percent Bond and similar soils: 35 percent

Minor components: 15 percent

## **Component Descriptions**

#### Hagerwest soils

Geomorphic position: Summits on hills and mesas and

dipslopes on cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 4.8 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, winterfat, sand dropseed, oneseed juniper, spineless horsebrush, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6D

## Typical Profile:

A—0 to 2 inches; fine sandy loam Bt—2 to 13 inches; sandy clay loam Bk1—13 to 19 inches; sandy clay loam Bk2—19 to 35 inches; sandy loam 2R—35 inches; sandstone bedrock

### **Bond soils**

Geomorphic position: Summits on hills and mesas and

dipslopes on cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow Sandstone

Present native vegetation: Bigelow's sagebrush, blue grama, fourwing saltbush, Indian ricegrass, New Mexico feathergrass, galleta, little bluestem, sideoats grama, winterfat, cliffrose, Mormon tea,

oneseed juniper, twoneedle pinyon Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 2 inches; fine sandy loam Bt1—2 to 5 inches; fine sandy loam Bt2—5 to 14 inches; sandy clay loam 2R—14 inches sandstone bedrock

## **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Tintero and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

Penistaja and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 225—Aquima-Hawaikuh silt loams, 1 to 5 percent slopes

## Map Unit Setting

MLRA: 36

Elevation: 6,000 to 6,800 feet (1,829 to 2,073 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## Map Unit Composition

Aquima and similar soils: 40 percent Hawaikuh and similar soils: 40 percent

Minor components: 20 percent

#### **Component Descriptions**

## Aquima soils

Geomorphic position: Stream terraces on valley floors

and alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from

siltstone, sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.7 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, winterfat, sand dropseed, rabbitbrush, broom snakeweed (fig. 4)

Land capability (irrigated): 3e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 8

#### Typical Profile:

A—0 to 2 inches; silt loam Bk1—2 to 11 inches; silt loam

Bk2—11 to 17 inches; sandy clay loam

2Bk3—17 to 45 inches; silt loam

3Bk4—45 to 49 inches; sandy clay loam

3Bk5—49 to 65 inches; gravelly clay loam

#### Hawaikuh soils

Geomorphic position: Fan remnants on valley sides

and stream terraces on valley floors

Parent material: Fan and stream alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.1 inches

(high)

Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike muhly

Land capability (irrigated): 3e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

## Typical Profile:

A-0 to 3 inches; silt loam

Btk1—3 to 12 inches; silty clay loam Btk2—12 to 29 inches; clay loam Bk1—29 to 39 inches; sandy clay loam Bk2—39 to 54 inches; sandy loam Bk3—54 to 65 inches; silty clay loam

#### **Minor Components**

Venadito and similar soils

Composition: About 10 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey Bottomland

#### Tintero and similar soils

Composition: About 6 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

#### Mido and similar soils

Composition: About 4 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Ecological site: Deep Sand



Figure 4.—Typical landscape of Aquima-Hawaikuh silt loams, 1 to 5 percent slopes. Fourwing saltbush and galleta grass dominate this unit.

# 230—Sparank-San Mateo-Zia complex, 0 to 3 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,300 to 6,900 feet (1,920 to 2,090 meters) Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9 to 12 degrees C)

Frost-free period: 120 to 140 days

#### **Map Unit Composition**

Sparank and similar soils: 40 percent San Mateo and similar soils: 35 percent Zia and similar soils: 20 percent

Minor components: 5 percent

#### **Component Descriptions**

#### Sparank soils

Geomorphic position: Flood plains on valley floors and alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from sandstone and shale

Slope: 0 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 10.0 inches (high) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Occasional

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey Bottomland

Present native vegetation: western wheatgrass, alkali sacaton, fourwing saltbush, galleta, blue grama, spike muhly, mat muhly, broom snakeweed, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CC

Typical Profile:

A—0 to 2 inches; silty clay loam

C1-2 to 25 inches; clay

C2-25 to 65 inches; clay

#### San Mateo soils

Geomorphic position: Flood plains on valley floors and

alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 0 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.6 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Occasional

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, galleta, spike muhly, mat muhly, sand dropseed,

spineless horsebrush Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

Typical Profile:

A—0 to 2 inches; clay loam

C1—2 to 15 inches; clay loam

C2—15 to 30 inches; sandy clay loam

C3—30 to 39 inches; clay loam

C4—39 to 45 inches; sandy loam

C5—45 to 65 inches; clay loam

### Zia soils

Geomorphic position: Stream terraces on valley floors

and alluvial fans on valley sides

Parent material: Eolian material and fan and stream alluvium derived from sandstone

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately

rapid)

Available water capacity: About 8.0 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Sandy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, fourwing saltbush, sand dropseed, needleandthread, spike dropseed, winterfat, galleta, ring muhly, rabbitbrush, sand

sagebrush, spineless horsebrush

Land capability (irrigated): 4e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 3

## Typical Profile:

A—0 to 3 inches; fine sandy loam Bw—3 to 12 inches; fine sandy loam 2C1—12 to 20 inches; fine sandy loam 2C2—20 to 28 inches; sandy loam 2C3—28 to 70 inches; fine sandy loam

#### **Minor Components**

Querencia and similar soils

Composition: About 3 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Penistaja and similar soils

Composition: About 2 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 235—Notal-Hamburn complex, 0 to 2 percent slopes

## Map Unit Setting

MLRA: 37

Elevation: 5,600 to 6,000 feet (1,707 to 1,829 meters)

Mean annual precipitation: 7 to 9 inches (178 to 229 millimeters)

Average annual air temperature: 50 to 55 degrees F (10

to 13 degrees C)

Frost-free period: 130 to 150 days

## **Map Unit Composition**

Notal and similar soils: 45 percent Hamburn and similar soils: 40 percent Minor components: 15 percent

## **Component Descriptions**

#### **Notal soils**

Geomorphic position: Stream terraces on valley

floors (fig. 5)

Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow) Available water capacity: About 9.1 inches (high) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 16 mmhos/cm (moderately saline)

Sodicity maximum: About 30 SAR (strongly sodic) Ecological site: Clay Loam Terrace (sodic) 5-8" P.z. Present native vegetation: alkali sacaton, mound

saltbush, galleta, greasewood Land capability (nonirrigated): 7c Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 1 inches; loam C—1 to 3 inches; clay loam

Cn1—3 to 13 inches; sandy clay loam Cn2—13 to 27 inches; clay loam

Cnkz1—27 to 44 inches; silty clay

Cnkz2—44 to 65 inches; sandy clay loam

#### Hamburn soils

Geomorphic position: Flood plains on valley floors Parent material: Stream alluvium derived from sandstone and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained



Figure 5.—Typical landscape of Notal-Hamburn complex, 0 to 2 percent slopes. These soils can produce an abundance of alkali sacaton.

Slowest permeability: About 0.20 in/hr (moderately slow)

Available water capacity: About 9.6 inches (high) Shrink-swell potential: About 5.0 LEP (moderate)

Flooding hazard: Occasional

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Saline Bottom 5-8" P.z.

Present native vegetation: alkali sacaton, galleta, Indian ricegrass, mound saltbush, western wheatgrass, perennial forbs, black greasewood, fourwing saltbush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 10

## Typical Profile:

AC-0 to 3 inches; clay loam

C1—3 to 8 inches; stratified clay loam C2—8 to 29 inches; sandy clay loam Cky1—29 to 52 inches; sandy clay loam Cky2—52 to 70 inches; clay loam

## **Minor Components**

Yelives and similar soils

Composition: About 10 percent

Slope: 1 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy Upland

Razito and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Excessively drained Ecological site: Sandy Upland

# 240—Breadsprings and Nahodish soils, 0 to 2 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 6,800 feet (1,859 to 2,195 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 46 to 49 degrees F (8 to 9 degrees C)

Frost-free period: 100 to 135 days

#### **Map Unit Composition**

Breadsprings and similar soils: 35 percent Nahodish and similar soils: 35 percent

Minor components: 30 percent

Urban land

In the City of Gallup, components of this map unit are covered by buildings, parking lots, roads, and sidewalks. The percentage of Urban land ranges from less than 10 percent on the city's periphery to 60 percent in densely developed residential sections. There are also many areas that have been cut and filled with a variety of earthen materials or man-made soils.

## **Component Descriptions**

#### **Breadsprings soils**

Geomorphic position: Stream terraces on valley floors (fig. 6)

Parent material: Stream alluvium derived from sandstone and shale

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 9.8 inches (high) Shrink-swell potential: About 2.0 LEP (low)

Flooding hazard: Rare Ponding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 15 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Salty Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, bottlebrush squirreltail, greasewood, inland

saltgrass, mound saltbush, mat muhly, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

#### Typical Profile:

A—0 to 3 inches; loam Bw1—3 to 7 inches; loam

Bw2—7 to 14 inches; stratified clay loam

Bk—14 to 22 inches; fine sandy loam Ck1—22 to 29 inches; stratified silt loam Ck2—29 to 36 inches; stratified loam Ck3—36 to 70 inches; stratified silt loam

Nahodish soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 10.9 inches (high)

Shrink-swell potential: About 2.0 LEP (low)

Flooding hazard: Rare Ponding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 10 percent

Salinity maximum: About 4 mmhos/cm (slightly saline) Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Salty Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama,

bottlebrush squirreltail, greasewood, inland saltgrass, mound saltbush, mat muhly, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 10

Typical Profile:

A-0 to 1 inches; silt loam

Bw1—1 to 9 inches; silty clay loam Bw2—9 to 17 inches; silty clay Bk1—17 to 31 inches; silty clay Bk2—31 to 36 inches; clay loam

2Bk3—36 to 58 inches; silt loam

3Bky—58 to 80 inches; clay

Minor Components

Nahodish Sodic and similar soils Composition: About 15 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salty Bottomland

Breadsprings Sodic and similar soils *Composition:* About 10 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches



Figure 6.—Typical landscape of Breadsprings and Nahodish soils, 0 to 2 percent slopes. Black greasewood has taken over many of these areas.

Drainage class: Well drained Ecological site: Salty Bottomland

Berryhill and similar soils

Composition: About 5 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

## 241—Mentmore loam, 1 to 8 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 6,900 feet (1,859 to 2,103 meters)
Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 45 to 49 degrees F (7

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Mentmore and similar soils: 85 percent

Minor components: 15 percent

Urban land

In the City of Gallup, components of this map unit are covered by buildings, parking lots, roads, and sidewalks. The percentage of Urban land ranges from less than 10 percent on the city's periphery to 60 percent in densely developed residential sections. There are also many areas that have been cut and filled with a variety of earthen materials or man-made soils.

#### **Component Descriptions**

#### Mentmore soils

Geomorphic position: Fan remnants on valley sides and drainageways on dipslopes on cuestas (fig. 7)

Parent material: Fan and slope alluvium derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 11.6 inches (high) Shrink-swell potential: About 5.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, big sagebrush, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, oneseed juniper, sand dropseed, spineless horsebrush, rabbitbrush, twoneedle

Conservation Tree/Shrub Group: 5

#### Typical Profile:

A—0 to 1 inches; loam
Bt1—1 to 2 inches; clay loam
Bt2—2 to 7 inches; sandy clay loam
Btk1—7 to 13 inches; clay loam
Btk2—13 to 22 inches; clay loam
Bk—22 to 70 inches; clay loam

## **Minor Components**

Atrac and similar soils

Composition: About 10 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Gish and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

# 242—Gish-Mentmore complex, 1 to 8 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,100 to 7,200 feet (1,859 to 2,195 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Gish and similar soils: 45 percent Mentmore and similar soils: 35 percent Minor components: 20 percent



Figure 7.—Mentmore loam, 1 to 8 percent slopes, is in the foreground. Coal Mine Land is in the background. Coal mining is a major commercial activity within the survey area.

#### **Component Descriptions**

#### Gish soils

Geomorphic position: Alluvial fans on valley sides and drainageways

Parent material: Fan alluvium derived from shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow) Available water capacity: About 9.2 inches (high) Shrink-swell potential: About 8.0 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike muhly

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

Typical Profile:

A—0 to 3 inches; clay loam Bw—3 to 13 inches; clay Bky1—13 to 27 inches; clay Bky2—27 to 55 inches; clay Bky3—55 to 64 inches; clay loam Bky4—64 to 70 inches; clay

#### Mentmore soils

Geomorphic position: Fan remnants on valley sides Parent material: Slope and fan alluvium derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 11.7 inches (high)

Shrink-swell potential: About 5.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 2 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, big sagebrush, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, oneseed juniper, sand dropseed, spineless horsebrush, rabbitbrush, twoneedle pinyon

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

#### Typical Profile:

A—0 to 2 inches; fine sandy loam Bw—2 to 4 inches; clay loam Bt1—4 to 13 inches; clay loam Bt2—13 to 24 inches; clay loam Bk1—24 to 44 inches; clay loam Bk2—44 to 62 inches; clay loam By—62 to 70 inches; clay loam

## **Minor Components**

Berryhill and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Clayey

Nahodish and similar soils

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Salty Bottomland

# 244—Buckle fine sandy loam, 1 to 8 percent slopes

#### Map Unit Setting

MLRA: 36

Elevation: 6,400 to 6,800 feet (1,951 to 2,073 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 45 to 49 degrees F

(7 to 9 degrees C)

Frost-free period: 100 to 135 days

#### **Map Unit Composition**

Buckle and similar soils: 85 percent Minor components: 15 percent

#### **Component Descriptions**

#### **Buckle soils**

Geomorphic position: Drainageways and fan remnants

on valley sides

Parent material: Eolian material and fan alluvium

derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.3 inches

(high)

Shrink-swell potential: About 7.0 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, big sagebrush, galleta, bottlebrush squirreltail, oneseed juniper, winterfat, sand dropseed, spineless horsebrush,

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

twoneedle pinyon, rabbitbrush

#### Typical Profile:

A—0 to 4 inches; fine sandy loam Bt1—4 to 14 inches; sandy clay loam Bt2—14 to 22 inches; sandy clay loam

Btk1—22 to 34 inches; loam Btk2—34 to 48 inches; clay loam Btk3—48 to 62 inches; clay loam Btk4—62 to 75 inches; clay loam

#### **Minor Components**

Gapmesa and similar soils

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Zia and similar soils

Composition: About 5 percent

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

## 245—Buckle-Gapmesa-Barboncito complex, 1 to 6 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,400 to 6,800 feet (1,951 to 2,073 meters) Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 45 to 49 degrees F (7

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Buckle and similar soils: 35 percent Gapmesa and similar soils: 30 percent Barboncito and similar soils: 25 percent

Minor components: 10 percent

Urban land

In the City of Gallup, components of this map unit are covered by buildings, parking lots, roads, and sidewalks. The percentage of Urban land ranges from less than 10 percent on the city's periphery to 60 percent in densely developed residential sections. There are also many areas that have been cut and filled with a variety of earthen materials or man-made soils.

## **Component Descriptions**

#### **Buckle soils**

Geomorphic position: Summits and sideslopes on ridges and hills and dipslope on cuestas

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 9.3 inches (high) Shrink-swell potential: About 2.0 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, big sagebrush, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, oneseed juniper, sand dropseed, spineless horsebrush, rabbitbrush, twoneedle pinvon

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

#### Typical Profile:

A—0 to 1 inches; loamy fine sand Bt1—1 to 7 inches; clay loam

Bt2—7 to 25 inches; sandy clay loam

Btk-25 to 35 inches; clay loam

Bk—35 to 80 inches; fine sandy loam

## Gapmesa soils

Geomorphic position: Summits on hills and ridges and

dipslopes on cuestas

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 5.6 inches (low) Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

*Gypsum maximum:* About 5 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, big sagebrush, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, oneseed juniper, sand dropseed, spineless horsebrush, rabbitbrush, twoneedle pinyon

Land capability (nonirrigated): 6c

Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 1 inches; fine sandy loam

Bt—1 to 9 inches; loam Btk1—9 to 20 inches; loam Btk2—20 to 31 inches; clay loam R—31 inches; sandstone bedrock

#### **Barboncito soils**

Geomorphic position: Summits on hills and ridges and dipslopes on cuestas

rent meterial: Felien met

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 1 to 3 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 1.8 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, big sagebrush, galleta, bottlebrush squirreltail, fourwing saltbush, needleandthread, oneseed juniper, sand dropseed, spineless horsebrush, rabbitbrush, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; loamy fine sand Bt1—2 to 6 inches; sandy clay loam Btk—6 to 11 inches; clay loam R—11 inches; sandstone bedrock

## **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Betonnie and similar soils

Composition: About 5 percent

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

# 250—Hospah-Skyvillage-Rock outcrop complex, 2 to 35 percent slopes

## Map Unit Setting

MLRA: 36

Elevation: 6,400 to 7,000 feet (1,951 to 2,134

meters)

Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Hospah and similar soils: 35 percent Skyvillage and similar soils: 30 percent

Rock outcrop: 25 percent Minor components: 10 percent

## **Component Descriptions**

## Hospah soils

Geomorphic position: Sideslopes on hills and ridges

and breaks

Parent material: Colluvium and residuum derived from

sandstone and shale Slope: 2 to 35 percent

Surface fragments: About 66 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.9 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 5 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 13 SAR (moderately

sodic)

Ecological site: Shale Hills

Present native vegetation: alkali sacaton, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, fourwing saltbush, little bluestem, needleandthread, sideoats grama, western wheatgrass, mound saltbush, shadscale saltbush, Bigelow's sagebrush, oneseed juniper, winterfat

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

Typical Profile:

A-0 to 3 inches; extremely cobbly clay loam

2BC—3 to 15 inches; clay 2Cr—15 inches; shale

## Skyvillage soils

Geomorphic position: Structural benches and summits

on hills and ridges and breaks

Parent material: Eolian material and slope alluvium derived from sandstone

Slope: 2 to 15 percent

Surface fragments: About 45 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 1.0 inches (very low)
Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Shallow Sandstone

Present native vegetation: Bigelow's sagebrush, blue grama, fourwing saltbush, galleta, Indian ricegrass, New Mexico feathergrass, little bluestem, shadscale saltbush, sideoats grama, winterfat, cliffrose, Mormon tea, oneseed juniper, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 1 inches; very channery sandy loam

C1—1 to 5 inches; sandy loam

C2—5 to 8 inches; channery sandy clay loam

2R-8 inches; hard sandstone

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Hagerwest and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Bond and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

# 255—Farview-Rock outcrop complex, 2 to 15 percent slopes

#### Map Unit Setting

MLRA: 36

Elevation: 6,500 to 6,900 feet (1,981 to 2,103 meters)
Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Farview and similar soils: 50 percent

Rock outcrop: 35 percent Minor components: 15 percent

## **Component Descriptions**

## Farview soils

Geomorphic position: Dipslopes on cuestas Parent material: Eolian material derived from

sandstone

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Somewhat excessively drained Slowest permeability: About 1.98 in/hr (moderately rapid)

Available water capacity: About 2.3 inches (very low)

Shrink-swell potential: About 2.0 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Pinyon-Juniper Forest Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 1 inches; loamy fine sand C—1 to 10 inches; fine sandy loam Ck—10 to 17 inches; fine sandy loam R—17 inches; sandstone bedrock

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Gapmesa and similar soils

Composition: About 8 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Mido and similar soils

Composition: About 7 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Ecological site: Deep Sand

# 258—Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,500 to 7,000 feet (1,981 to 2,134 meters)
Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

#### **Map Unit Composition**

Eagleye and similar soils: 40 percent Atchee and similar soils: 35 percent

Rock outcrop: 20 percent Minor components: 5 percent

Urban land

In the City of Gallup, components of this map unit

are covered by buildings, parking lots, roads, and sidewalks. The percentage of Urban land ranges from less than 10 percent on the city's periphery to 60 percent in densely developed residential sections. There are also many areas that have been cut and filled with a variety of earthen materials or man-made soils.

#### **Component Descriptions**

## Eagleye soils

Geomorphic position: Sideslopes on hills and ridges (fig. 8)

Parent material: Slope alluvium over residuum derived from shale

Slope: 5 to 35 percent

Surface fragments: About 16 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 8.0 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: None Gypsum maximum: About 2 percent Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, blue grama, bottlebrush squirreltail, broom snakeweed, threeawn, mat muhly, oneseed juniper, spike muhly, twoneedle pinyon

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

Typical Profile:

A-0 to 2 inches; gravelly clay loam

Cy—2 to 10 inches; clay Cr—10 inches; shale

#### Atchee soils

Geomorphic position: Summits on hills and ridges

Parent material: Slope alluvium over residuum derived

from sandstone and shale

Slope: 2 to 10 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained



Figure 8.—Typical landscape of the Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes. Steep, broken slopes provide wildlife habitat.

Slowest permeability: About 0.20 in/hr (moderately slow)

Available water capacity: About 1.3 inches (very low) Shrink-swell potential: About 5.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, black sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, oneseed juniper, threeawn, twoneedle pinyon, mat muhly, spike

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10 Typical Profile:

A-0 to 2 inches; fine sandy loam

C1—2 to 12 inches; extremely channery sandy clay loam

C2—12 to 14 inches; extremely channery sandy clay loam

R—14 inches; sandstone bedrock

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Lockerby and similar soils

Composition: About 3 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Clayey

Barboncito and similar soils

Composition: About 2 percent

Slope: 2 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

#### 260—Quarries and Pits

This unit consists of limestone quarries and gravel and borrow pits. This unit occurs throughout the county and on a wide variety of different soils. Included in this unit is the demolition area on Ft. Wingate. This unit is used for the excavation of construction materials. Recommendations on use, reclamation, and revegetation need to be made on a site-specific basis.

#### 261—Coal Mine Land

This unit consists of all areas associated with coal mine activities. These areas include the actual mines, barren tailings, and reclaimed areas. This unit occurs in the northwest part of Mckinley county, from Gallup to near Window Rock, Arizona. Recommendations on use, revegetation, and reclamation need to be made on a site-specific basis.

#### 265—Uranium Mined Lands

This unit consists of all areas associated with uranium mine activities. These areas include the actual mines, shafts, structures, borrow pits, barren tailings and waste rock piles, evaporation ponds, and contaminated waste yards. This unit occurs throughout the county and on a wide variety of different soils. These areas, unless reclaimed or revegetated, have no agricultural uses. Recommendations on use, revegetation and reclamation need to be made on a site-specific basis.

# 270—Alesna-Rock outcrop complex, 15 to 55 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,500 to 7,600 feet (1,981 to 2,316 meters) Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9 to 12 degrees C)

Frost-free period: 120 to 140 days

#### **Map Unit Composition**

Alesna and similar soils: 70 percent

Rock outcrop: 20 percent Minor components: 10 percent

## **Component Descriptions**

#### Alesna soils

Geomorphic position: Volcanic cones and escarpments

on lava plateaus

Parent material: Slope alluvium and colluvium derived

from basalt, shale, and sandstone

Slope: 15 to 55 percent

Surface fragments: About 65 percent

Depth to restrictive feature: 40 to 60 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow) Available water capacity: About 8.0 inches

(moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 40 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Foothills

Present native vegetation: blue grama, galleta, sideoats grama, alkali sacaton, black grama, bottlebrush squirreltail, fourwing saltbush, little bluestem, needleandthread, winterfat, common wolfstail, oneseed juniper, twoneedle pinyon, narrowleaf yucca

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4K

#### Typical Profile:

A—0 to 1 inches; extremely cobbly loam Bt—1 to 10 inches; gravelly clay loam Btk1—10 to 20 inches; very gravelly clay Btk2—20 to 26 inches; clay Btk3—26 to 52 inches; clay loam 2Cr—52 inches; basalt bedrock

#### Rock outcrop

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Azabache and similar soils

Composition: About 4 percent

Slope: 5 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Loamy Upland (sodic)

Hagerwest and similar soils

Composition: About 3 percent

Slope: 5 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Bond and similar soils

Composition: About 3 percent

Slope: 5 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

## 275—Eldado gravelly fine sandy loam, 1 to 5 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,300 to 7,300 feet (1,920 to 2,225 meters) Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 54 degrees F (9 to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Eldado and similar soils: 85 percent Minor components: 15 percent

#### **Component Descriptions**

## Eldado soils

Geomorphic position: Relict stream terraces on valley floors

Parent material: Eolian and stream alluvium derived from basalt and sandstone

Slope: 1 to 5 percent

Surface fragments: About 15 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 3.8 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 50 percent

Gvpsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Gravelly

Present native vegetation: blue grama, sideoats grama, Indian ricegrass, black grama, bottlebrush squirreltail, little bluestem, needleandthread, western wheatgrass, winterfat, fourwing saltbush, galleta, oneseed juniper, rabbitbrush, sand

dropseed, twoneedle pinyon Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6GK

## Typical Profile:

A—0 to 2 inches; gravelly fine sandy loam Btk1—2 to 9 inches; sandy clay loam Btk2—9 to 13 inches; sandy clay loam Bk1—13 to 25 inches; sandy clay loam

2Bk2—25 to 43 inches; extremely gravelly loamy coarse sand

2C-43 to 72 inches; extremely gravelly coarse sand

#### **Minor Components**

Eldado and similar soils

Composition: About 15 percent

Slope: 5 to 30 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Gravelly

## 280—Azabache extremely gravelly clay loam, 2 to 8 percent slopes

## **Map Unit Setting**

MLRA: 37

Elevation: 6,500 to 6,900 feet (1,981 to 2,103 meters) Mean annual precipitation: 8 to 10 inches (229 to 254 millimeters)

Average annual air temperature: 50 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 130 to 140 days

## **Map Unit Composition**

Azabache and similar soils: 85 percent

Minor components: 15 percent

#### **Component Descriptions**

#### Azabache soils

Geomorphic position: Lava plateaus, volcanic cones,

and stream terraces on valley floors

Parent material: Slope alluvium derived from basalt,

shale, and sandstone Slope: 2 to 8 percent

Surface fragments: About 76 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow) Available water capacity: About 4.3 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 15 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 16 mmhos/cm (moderately

saline)

Sodicity maximum: About 30 SAR (strongly sodic) Ecological site: Loamy Upland (sodic) 5-8" P.z. Present native vegetation: alkali sacaton, mound saltbush, galleta, Indian ricegrass, blue grama,

sand dropseed, shadscale saltbush *Land capability (nonirrigated):* 7s

Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 1 inches; extremely gravelly clay loam

Btn—1 to 5 inches; clay

Btknz1—5 to 17 inches; gravelly sandy clay loam

Btknz2—17 to 32 inches; extremely gravelly sandy clay loam

Btknz3—32 to 50 inches; extremely gravelly fine sandy loam

2Btnz—50 to 62 inches; very gravelly fine sandy loam

#### **Minor Components**

Eldado and similar soils

Composition: About 15 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Gravelly

# 290—Rock outcrop-Westmion-Skyvillage complex, 30 to 80 percent slopes

## **Map Unit Setting**

Elevation: 6,400 to 8,100 feet (1,951 to 2,469 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Mean annual air temperature: 49 to 54 degrees F (9.4

to 12.0 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Rock outcrop: 45 percent

Westmion and similar soils: 30 percent Skyvillage and similar soils: 15 percent

Minor components: 10 percent

## **Component Descriptions**

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone. Slopes range from about 5 to 15 percent on treads (structural benches) to almost vertical cliffs on the risers (escarpment face).

#### **Westmion soils**

Landform: Escarpments on mesas and cuestas Parent material: Slope alluvium and colluvium over

residuum derived from shale

Slope: 30 to 50 percent

Surface fragments: About 30 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: .06 to 0.2 in/hr (slow)

Available water capacity: About 2.1 inches (very low)

Shrink-swell potential: About 7.5 percent (high)

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 5 (slightly

sodic)

Ecological site: Foothills

Potential native vegetation: Indian ricegrass, Mormon tea, blue grama, cliffrose, fourwing saltbush, galleta, little bluestem, mountainmahogany, sideoats grama, winterfat, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 7e

Typical Profile:

A—0 to 2 inches; gravelly clay loam

2C-2 to 14 inches; clay

2Cr—14 to 20 inches; weathered bedrock

### Skyvillage soils

Landform: Structural benches on escarpments on

mesas and cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone *Slope:* 30 to 40 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid) Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 0 (nonsodic)

Ecological site: Shallow Sandstone

Potential native vegetation: Bigelow sagebrush, blue grama, fourwing saltbush, galleta, Indian ricegrass, New Mexico feathergrass, little bluestem, shadscale saltbush, sideoats grama, winterfat, cliffrose, mormon tea, oneseed juniper, twoneedle pinyon

Land capability subclass (nonirrigated): 7s

Typical Profile:

A—0 to 2 inches; sandy loam C—2 to 13 inches; sandy loam

R—13 to 20 inches; unweathered bedrock

### **Minor Components**

Hospah and similar soils

Composition: About 6 percent Slope: 30 to 80 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Shale Hills

Vessilla and similar soils

Composition: About 2 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone

Skyvillage and similar soils

Composition: About 2 percent

Slope: 2 to 20 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

# 291—Rock outcrop-Eagleye-Atchee complex, 35 to 70 percent slopes

### Map Unit Setting

Elevation: 6,500 to 7,500 feet (1,981 to 2,286 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Mean annual air temperature: 46 to 49 degrees F (8.0

to 9.4 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Rock outcrop: 50 percent

Eagleye and similar soils: 25 percent Atchee and similar soils: 15 percent Minor components: 10 percent

# **Component Descriptions**

### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone. Slopes range from about 5 to 15 percent on treads (structural benches) to almost vertical cliffs on the risers (escarpment face).

#### Eagleye soils

Landform: Escarpments on cuestas and mesas

Parent material: Slope alluvium over residuum derived
from shale

Slope: 35 to 70 percent

Surface fragments: About 25 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately

slow

Available water capacity: About 2.6 inches (very low) Shrink-swell potential: About 5.0 percent (moderate)

Runoff class: Very high

Calcium carbonate maximum: None Gypsum maximum: About 2 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 0

(nonsodic)

Ecological site: Draft Clayey 9-14" P.z.

Potential native vegetation: western wheatgrass, alkali sacaton, big sagebrush, blue grama, bottlebrush

squirreltail, fourwing saltbush, galleta, Indian ricegrass, rabbitbrush, winterfat Land capability subclass (nonirrigated): 7e

Typical Profile:

A—0 to 2 inches; very gravelly silty clay loam

C1—2 to 7 inches; silty clay loam C2—7 to 13 inches; silty clay loam Cr—13 to 20 inches; weathered bedrock

#### Atchee soils

Landform: Structural benches on escarpments on

cuestas and mesas

Parent material: Slope alluvium over residuum derived

from sandstone Slope: 35 to 50 percent

Surface fragments: About 57 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: 0.6 to 2.0 in/hr (moderate)

Available water capacity: About 1.1 inches (very low)

Shrink-swell potential: About 2.0 percent (low)

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodium adsorption ratio maximum: About 0 (nonsodic)

Ecological site: Draft Clayey 9-14" P.z.

Potential native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, oneseed juniper, threeawn, twoneedle pinyon, winterfat, mat muhly, spike muhly

Land capability subclass (nonirrigated): 7e

Typical Profile:

A—0 to 2 inches; very gravelly fine sandy loam

C—2 to 8 inches; very channery fine sandy loam

R—8 to 20 inches; unweathered bedrock

**Minor Components** 

Gapmesa and similar soils

Composition: About 5 percent

Slope: 2 to 10 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Atchee and similar soils

Composition: About 5 percent

Slope: 2 to 35 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Clayey

# 300—Regracic gravelly sandy clay loam, 2 to 6 percent slopes

# **Map Unit Setting**

MLRA: 36

Elevation: 7,400 to 7,700 feet (2,256 to 2,347 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 47 to 53 degrees F (8

to 12 degrees C)

Frost-free period: 100 to 135 days

# **Map Unit Composition**

Regracic and similar soils: 80 percent

Minor components: 20 percent

## **Component Descriptions**

## Regracic soils

Geomorphic position: Stream terraces on valley floors

Parent material: Stream alluvium derived from sandstone, shale, and conglomerate

Slope: 2 to 6 percent

Surface fragments: About 31 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 40 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Rocky Mountain juniper, blue grama, muttongrass, oneseed juniper, ponderosa pine, rabbitbrush, twoneedle pinyon,

western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

## Typical Profile:

A—0 to 2 inches; gravelly sandy clay loam

Bt-2 to 31 inches; clay, clay loam

2Btk1—31 to 45 inches; very gravelly sandy clay

2Btk2-45 to 50 inches; clay loam

2Btk3—50 to 60 inches; stratified very gravelly

sandy clay loam

3BCk—60 to 80 inches; gravelly sandy loam

## **Minor Components**

Tuces and similar soils

Composition: About 10 percent

Slope: 2 to 10 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Venzuni and similar soils

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

# 305—Celavar-Atarque complex, 1 to 8 percent slopes

### **Map Unit Setting**

MLRA:36

Elevation: 6,500 to 7,500 feet (1,981 to 2,286 meters)
Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

## **Map Unit Composition**

Celavar and similar soils: 50 percent Atarque and similar soils: 35 percent Minor components: 15 percent

### **Component Descriptions**

## Celavar soils

Geomorphic position: Dipslopes on cuestas and

summits on mesas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 4.7 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Savannah

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, Mormon tea needleandthread, oneseed juniper, sand dropseed, twoneedle pinyon, muttongrass, rabbitbrush, winterfat, Bigelow's sagebrush, bottlebrush

squirreltail, spineless horsebrush Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6D

### Typical Profile:

A—0 to 2 inches; loam

Bt1—2 to 24 inches; sandy clay loam Bt2—24 to 31 inches; sandy clay loam 2R—31 inches; sandstone bedrock

### Atarque soils

Geomorphic position: Dipslopes on cuestas and

summits on mesas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 3 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow Sandstone

Present native vegetation: Indian ricegrass, New Mexico feathergrass, blue grama, little bluestem, sideoats grama, Bigelow's sagebrush, fourwing saltbush, galleta, rabbitbrush, twoneedle pinyon,

Mormon tea, oneseed juniper Land capability (nonirrigated): 7s

Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 3 inches; sandy loam Bt—3 to 14 inches; sandy clay loam 2R—14 inches; sandstone bedrock

### **Minor Components**

Rock outcrop

Composition: About 9 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Flugle and similar soils

Composition: About 6 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 308—Fikel-Venzuni complex, 1 to 6 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 7,000 to 7,600 feet (2,134 to 2,316 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 49 to 53 degrees F (9 to 12 degrees C)

Frost-free period: 115 to 135 days

## **Map Unit Composition**

Fikel and similar soils: 50 percent Venzuni and similar soils: 40 percent Minor components: 10 percent

## **Component Descriptions**

### Fikel soils

Geomorphic position: Fan remnants on valley sides Parent material: Fan alluvium derived from sandstone and shale

Slope: 2 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 9.0 inches (moderate)

Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike muhly

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

### Typical Profile:

A—0 to 3 inches; clay loam Bt—3 to 14 inches; clay Btk1—14 to 32 inches; clay

Btk2—32 to 50 inches; sandy clay loam

Btk3-50 to 65 inches; clay

Btk4—65 to 70 inches; sandy clay loam

### Venzuni soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow)

Available water capacity: About 7.9 inches (moderate)

Shrink-swell potential: About 8.0 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike muhly

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

Typical Profile:

A—0 to 7 inches; clay Bss1—7 to 22 inches; clay Bss2—22 to 42 inches; clay Bk1—42 to 56 inches; sandy clay 2Bk2—56 to 75 inches; sandy clay loam

## **Minor Components**

Celavar and similar soils

Composition: About 5 percent

Slope: 1 to 6 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Savannah

### Bluewater

Composition: About 5 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Somewhat poorly drained

Ecological site: Meadow

# 310—Parkelei sandy loam, 1 to 8 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,500 to 7,800 feet (1,981 to 2,377 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Parkelei and similar soils: 80 percent Minor components: 20 percent

## **Component Descriptions**

#### Parkelei soils

Geomorphic position: Summits on plateaus and mesas, dipslopes on cuestas, and drainageways Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 9.0 inches (moderate) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

*Gypsum maximum:* None

Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: western wheatgrass, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, needleandthread, winterfat, broom snakeweed, muttongrass, rabbitbrush, spineless horsebrush, oneseed juniper, twoneedle pinyon

Land capability (irrigated): 2e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

## Typical Profile:

A—0 to 2 inches; sandy loam
Bt—2 to 21 inches; sandy clay loam
Btk1—21 to 55 inches; sandy clay loam
Btk2—55 to 65 inches; clay loam

## **Minor Components**

Fraguni and similar soils

Composition: About 10 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Somewhat excessively drained

Ecological site: Sandy

Evpark and similar soils

Composition: About 5 percent

Slope: 1 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Galzuni and similar soils

Composition: About 3 percent

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Bryway and similar soils

Composition: About 2 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Loamy

# 312—Bluewater loam, 0 to 1 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 7,200 to 7,600 feet (2,195 to 2,316 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 48 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Bluewater: 90 percent

Minor components: 10 percent

## **Component Descriptions**

### Bluewater

Geomorphic position: Stream terraces on valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Somewhat poorly drained Slowest permeability: About 0.01 in/hr (very slow) Available water capacity: About 11.2 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Rare

Seasonal water table minimum depth: About 36 inches

Runoff class: Low

Calcium carbonate maximum: About 30 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Meadow

Present native vegetation: western wheatgrass, rush, sedge, California brome, bottlebrush squirreltail,

slender wheatgrass, willow, clover

Land capability (irrigated): 3s Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 1K

### Typical Profile:

A-0 to 2 inches; loam

Btk1—2 to 11 inches; clay loam Btk2—11 to 28 inches; clay loam Btk3—28 to 50 inches; clay loam Btk4—50 to 70 inches; clay Bk—70 to 80 inches; clay

## **Minor Components**

Venzuni and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Fikel and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

# 315—Flugle-Fragua complex, 1 to 10 percent slopes

## Map Unit Setting

MLRA: 36

Elevation: 6,400 to 7,300 feet (1,951 to 2,225 meters) Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

## **Map Unit Composition**

Flugle and similar soils: 50 percent Fragua and similar soils: 40 percent Minor components: 10 percent

## **Component Descriptions**

## Flugle soils

Geomorphic position: Fan remnants on valley sides, summits on mesas, and dipslopes on cuestas Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 8.9 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, galleta, muttongrass, oneseed juniper, sand dropseed, spineless horsebrush, threeawn,

twoneedle pinyon, narrowleaf yucca Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

Typical Profile:

A-0 to 3 inches; loam

Bt1—3 to 10 inches; sandy clay loam Bt2—10 to 28 inches; clay loam Bk—28 to 65 inches; sandy loam

### Fragua soils

Geomorphic position: Fan remnants on valley sides, summits on mesas, and dipslopes on cuestas Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope: 1 to 10 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 7.0 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

ieet

Runoff class: Low

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Sandy Slopes

Present native vegetation: Indian ricegrass, blue

grama, western wheatgrass, galleta,

needleandthread, rabbitbrush, sand dropseed, spineless horsebrush, threeawn, oneseed juniper,

ring muhly, twoneedle pinyon Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

Typical Profile:

A—0 to 2 inches; loamy fine sand Btk—2 to 19 inches; sandy loam Bk—19 to 65 inches; sandy loam

## **Minor Components**

Celavar and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Royosa and similar soils

Composition: About 5 percent

Slope: 1 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained Ecological site: Sandy Plains

# 316—Royosa loamy fine sand, 1 to 15 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,400 to 7,000 feet (1,951 to 2,134 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

# **Map Unit Composition**

Royosa and similar soils: 80 percent Minor components: 20 percent

## **Component Descriptions**

## Royosa soils

Geomorphic position: Dunes

Parent material: Eolian material derived from

sandstone

Slope: 1 to 15 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 6.00 in/hr (rapid)
Available water capacity: About 5.9 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very low

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Sandy Plains

Present native vegetation: blue grama, Indian ricegrass, big sagebrush, oneseed juniper, sand sagebrush, little bluestem, rabbitbrush, twoneedle pinyon, antelope bitterbrush, cliffrose, spineless horsebrush

Land capability (nonirrigated): 6e Conservation Tree/Shrub Group: 7

Typical Profile:

A1—0 to 2 inches; loamy fine sand A2—2 to 6 inches; loamy fine sand C—6 to 65 inches; fine sand

### **Minor Components**

Parkelei and similar soils

Composition: About 10 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Fraguni and similar soils

Composition: About 5 percent

Slope: 1 to 10 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

Plumasano and similar soils

Composition: About 5 percent

Slope: 5 to 15 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Sandy Slopes

# 317—Highdye-Evpark-Bryway complex, 2 to 20 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,800 to 7,600 feet (2,073 to 2,316 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Highdye and similar soils: 35 percent Evpark and similar soils: 30 percent

Bryway and similar soils: 20 percent Minor components: 15 percent

### **Component Descriptions**

### Highdye soils

Geomorphic position: Sideslopes and summits on hills and ridges, dipslopes on cuestas, and summits on mesas

Parent material: Eolian material and slope alluvium over residuum derived from sandstone and shale

Slope: 2 to 20 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.8 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, cliffrose, fringed sagewort,

muttongrass, oneseed juniper, pingue hymenoxys, prairie junegrass, threeawn, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 3 inches; fine sandy loam Bt1—3 to 5 inches; clay loam 2Bt2—5 to 12 inches; clay 2R—12 inches; sandstone bedrock

### **Evpark soils**

Geomorphic position: Sideslopes and summits on hills and ridges, dipslopes on cuestas, and summits on mesas

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 3.9 inches (low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, muttongrass, oneseed juniper, prairie junegrass, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6D

### Typical Profile:

A-0 to 5 inches; loam

Bt1—5 to 10 inches; clay loam

Bt2—10 to 24 inches; sandy clay loam R—24 inches; unweathered bedrock

## **Bryway soils**

Geomorphic position: Sideslopes on hills and ridges, dipslopes on cuestas, and summits on mesas

Parent material: Slope alluvium over residuum derived from shale and sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 3.3 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, Indian ricegrass, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, mountainmahogany, muttongrass, oneseed juniper, pingue hymenoxys, prairie

junegrass, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c

Conservation Tree/Shrub Group: 4C

Typical Profile:

A—0 to 4 inches; sandy loam Bt1—4 to 10 inches; clay Bt2—10 to 23 inches; clay 2Cr—23 inches; shale

### **Minor Components**

Vessilla and similar soils

Composition: About 5 percent

Slope: 2 to 4 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone

Galzuni and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Parkelei and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# 320—Parkelei-Fraguni complex, 1 to 8 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,500 to 7,500 feet (1,981 to 2,286

meters)

Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Parkelei and similar soils: 45 percent Fraguni and similar soils: 40 percent Minor components: 15 percent

### **Component Descriptions**

## Parkelei soils

Geomorphic position: Dipslopes on cuestas, summits

on mesas and plateaus, and fan remnants on valley sides

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale (fig. 9)

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 8.6 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, Indian ricegrass, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, buckwheat, muttongrass, oneseed juniper, prairie junegrass, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

## Typical Profile:

A—0 to 4 inches; fine sandy loam Bt1—4 to 18 inches; sandy clay loam Bt2—18 to 28 inches; sandy clay loam Bt3—28 to 39 inches; sandy clay loam Btk—39 to 52 inches; sandy clay loam Bk—52 to 70 inches; fine sandy loam

## Fraguni soils

Geomorphic position: Dipslopes on cuestas, summits on mesas and plateaus, and fan remnants on valley sides

Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 7.2 inches (moderate) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very low

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Pinyon-Juniper Forest

Present native vegetation: Indian ricegrass, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, muttongrass, oneseed juniper, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

## Typical Profile:

A—0 to 4 inches; loamy fine sand Bt1—4 to 20 inches; fine sandy loam Bt2—20 to 46 inches; loamy fine sand Bt3—46 to 58 inches; sandy clay loam BC—58 to 70 inches; fine sandy loam

### **Minor Components**

Evpark and similar soils

Composition: About 8 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Bryway and similar soils

Composition: About 7 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# 325—Venzuni silty clay, 1 to 3 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,700 to 7,600 feet (2,042 to 2,316 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Venzuni and similar soils: 90 percent Minor components: 10 percent

## **Component Descriptions**

### Venzuni soils

Geomorphic position: Stream terraces on valley floors

and alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from

shale

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow)

Available water capacity: About 9.0 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, rush, sedge, slender wheatgrass, California brome,

muttongrass, willow
Land capability (irrigated): 3s
Land capability (nonirrigated): 6c
Conservation Tree/Shrub Group: 4CC

Typical Profile:

A—0 to 2 inches; silty clay BC—2 to 12 inches; silty clay Bss—12 to 46 inches; clay 2Bss—46 to 65 inches; clay

## **Minor Components**

Nutreeah and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Ecological site: Meadow

Suwanee and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

# 332—Evpark-Arabrab complex, 2 to 6 percent slopes

### **Map Unit Setting**

MLRA:36

Elevation: 6,800 to 8,000 feet (2,073 to 2,438 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Evpark and similar soils: 50 percent Arabrab and similar soils: 40 percent Minor components: 10 percent

## **Component Descriptions**

### **Evpark soils**

Geomorphic position: Dipslopes on cuestas and

summits on mesas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 2 to 6 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 7.0 inches (moderate) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, muttongrass, oneseed juniper, prairie junegrass, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6D



Figure 9.—Typical landscape of Parklei-Fraguni complex, 1 to 8 percent slopes. Profile of the Parklei soil in a roadcut.

#### Typical Profile:

A-0 to 2 inches; fine sandy loam

Bt1—2 to 9 inches; loam

Bt2-9 to 36 inches; clay loam

R-36 inches; sandstone bedrock

### Arabrab soils

Geomorphic position: Dipslopes on cuestas and summits on mesas

Parent material: Eolian material and slope alluvium over residuum derived from sandstone

Slope: 2 to 6 percent

Surface fragments: About 23 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Shrink-swell potential: About 4.0 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: big sagebrush,

muttongrass, Utah serviceberry, banana yucca, bottlebrush squirreltail, cliff fendlerbush, thrifty

goldenweed, toadflax penstemon, oneseed juniper, twoneedle pinyon

Land capability (nonirrigated): 7s

Conservation Tree/Shrub Group: 10

# Typical Profile:

A—0 to 2 inches; gravelly fine sandy loam

Bt1—2 to 7 inches; sandy clay loam

Bt2—7 to 12 inches; clay loam

Btk—12 to 17 inches; gravelly clay loam

R—17 inches; sandstone bedrock

# **Minor Components**

Highdye and similar soils

Composition: About 3 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Pinyon-Juniper Forest

Parkelei and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Rock outcrop

Composition: About 2 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

# 335—Venadito clay, 1 to 3 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,600 to 7,100 feet (2,012 to 2,164 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Venadito and similar soils: 85 percent

Minor components: 15 percent

## **Component Descriptions**

### Venadito soils

Geomorphic position: Swales, depressions, and flood plains on valley floors and alluvial fans on valley sides

Parent material: Fan and stream alluvium derived from shale

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow) Available water capacity: About 8.9 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Clayey Bottomland

Present native vegetation: western wheatgrass, alkali sacaton, fourwing saltbush, galleta, blue grama, spike muhly, mat muhly, broom snakeweed,

rabbitbrush

Land capability (irrigated): 4w Land capability (nonirrigated): 6w Conservation Tree/Shrub Group: 4CC

Typical Profile:

A—0 to 3 inches; clay BCss1—3 to 30 inches; clay BCss2—30 to 65 inches; clay

## **Minor Components**

Suwanee and similar soils

Composition: About 10 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

Nuffel and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Bottomland

# 336—Nuffel-Venadito complex, 1 to 3 percent slopes

## Map Unit Setting

*MLRA:* 36

Elevation: 6,100 to 6,500 feet (1,859 to 1,981 meters)
Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Nuffel and similar soils: 45 percent Venadito and similar soils: 35 percent Minor components: 20 percent

## **Component Descriptions**

## **Nuffel soils**

Geomorphic position: Flood plains on valley floors

Parent material: Stream alluvium derived from siltstone and shale

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 10.5 inches (high)

Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, blue grama, galleta, spike muhly, mat muhly, sand dropseed, spineless horsebrush

Land capability (irrigated): 4w Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 8

### Typical Profile:

A—0 to 2 inches; silt loam C1—2 to 10 inches; sandy loam C2—10 to 17 inches; silt loam C3—17 to 20 inches; loam

C4—20 to 47 inches; silty clay loam 2Ab—47 to 65 inches; silty clay

#### Venadito soils

Geomorphic position: Flood plains, depressions and swales on valley floors

Parent material: Stream alluvium derived from shale

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow)

Available water capacity: About 7.7 inches (moderate)

Shrink-swell potential: About 11.0 LEP (very high)

Flooding hazard: Frequent

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 10 SAR (slightly sodic)

Ecological site: Clayey Bottomland

Present native vegetation: western wheatgrass, alkali sacaton, fourwing saltbush, galleta, blue grama, spike muhly, mat muhly, broom snakeweed, rabbitbrush

Land capability (irrigated): 4w Land capability (nonirrigated): 6w Conservation Tree/Shrub Group: 4CC

## Typical Profile:

A—0 to 2 inches; clay BCss1—2 to 9 inches; clay BCss2—9 to 11 inches; silty clay BCss3—11 to 65 inches; clay

# **Minor Components**

Hawaikuh and similar soils

Composition: About 8 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

### Aguima and similar soils

Composition: About 8 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# Penistaja and similar soils

Composition: About 4 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 338—Zyme-Lockerby association, 5 to 35 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,500 to 7,200 feet (1,981 to 2,195 meters) Mean annual precipitation: 10 to 13 inches (254 to 330 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Zyme and similar soils: 50 percent Lockerby and similar soils: 40 percent

Minor components: 10 percent

### **Component Descriptions**

## Zyme soils

Geomorphic position: Sideslopes and summits on hills

and ridges

Parent material: Residuum derived from shale

Slope: 5 to 35 percent

Surface fragments: About 16 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 2.4 inches (very low)

Shrink-swell potential: About 8.0 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 2 percent

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike muhly

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A-0 to 3 inches; channery silty clay loam

Cky1—3 to 8 inches; silty clay Cky2—8 to 15 inches; channery clay

Cr-15 inches; shale

### Lockerby soils

Geomorphic position: Sideslopes on hills and ridges Parent material: Residuum derived from shale

Slope: 5 to 15 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 4.0 inches (low) Shrink-swell potential: About 8.0 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: alkali sacaton, western wheatgrass, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, broom snakeweed, fourwing saltbush, threeawn, winterfat, mat muhly, spike

muhly

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 1 inches; silty clay loam Bw—1 to 11 inches; clay Bss—11 to 15 inches; clay Bssy—15 to 26 inches; clay Cr—26 inches; shale

### **Minor Components**

Rock outcrop

Composition: About 6 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Marianolake and similar soils

Composition: About 4 percent

Slope: 5 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 345—Rock outcrop-Tuces complex, 20 to 70 percent slopes

# Map Unit Setting

MLRA: 36

Elevation: 7,400 to 8,000 feet (2,256 to 2,438 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Rock outcrop: 40 percent

Tuces and similar soils: 40 percent Minor components: 20 percent

## **Component Descriptions**

# **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

### **Tuces soils**

Geomorphic position: Escarpments on cuestas Parent material: Slope alluvium and colluvium over residuum derived from sandstone and shale

Slope: 20 to 40 percent

Surface fragments: About 75 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow) Available water capacity: About 3.5 inches (low) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, banana yucca, blue grama, bottlebrush squirreltail, buckwheat, cliffrose, fourwing saltbush, galleta, mountainmahogany, muttongrass, needlegrass, oneseed juniper, sideoats grama, threeawn, twoneedle pinyon

Land capability (nonirrigated): 8 Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 1 inches; extremely gravelly clay loam

Bk1—1 to 4 inches; clay Bk2-4 to 24 inches: clav Cr-24 inches: shale

## **Minor Components**

Vessilla and similar soils

Composition: About 10 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively

Ecological site: Shallow Sandstone

Fikel and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Venzuni and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60

Drainage class: Well drained Ecological site: Meadow

# 350—Toldohn-Vessilla-Rock outcrop complex, 8 to 35 percent slopes

# **Map Unit Setting**

Elevation: 6,800 to 8,000 feet (2,073 to 2,438 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Mean annual air temperature: 46 to 49 degrees F (8.0

to 9.4 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Toldohn and similar soils: 35 percent Vessilla and similar soils: 30 percent

Rock outcrop: 20 percent Minor components: 15 percent

### **Component Descriptions**

## Toldohn soils

Landform: Breaks, ridges, hills

Parent material: Slope alluvium over residuum derived

from shale

Slope: 8 to 35 percent

Surface fragments: About 25 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: .06 to 0.2 in/hr (slow)

Available water capacity: About 1.5 inches (very low) Shrink-swell potential: About 7.5 percent (high)

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 2 (slightly

sodic)

Ecological site: pinyon-juniper forest Potential native vegetation:

Common trees: oneseed juniper, Rocky Mountain juniper, Gambel oak, twoneedle pinyon
Other plants: Gambel oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, little bluestem, mountainmahogany, muttongrass, oneseed juniper, prairie junegrass, sideoats grama, twoneedle pinyon

Land capability subclass (nonirrigated): 7s

# Typical Profile:

A-0 to 4 inches; gravelly clay loam

2BC-4 to 11 inches; clay

2Cr—11 to 20 inches; weathered bedrock

#### Vessilla soils

Landform: Breaks, structural benches on ridges,

structural benches on hills

Parent material: Eolian and slope alluvium derived from

sandstone

Slope: 8 to 15 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 1.5 inches (very low)

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)

Sodium adsorption ratio maximum: About 0 (nonsodic) Ecological site: pinyon-juniper forest

Potential native vegetation:

Common trees: oneseed juniper, Rocky Mountain

juniper, Gambel oak, twoneedle pinyon

Other plants: Gambel oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, broom snakeweed, buckwheat, little bluestem, mountainmahogany, muttongrass, oneseed juniper, prairie junegrass, sideoats grama,

twoneedle pinyon

Land capability subclass (nonirrigated): 7s

# Typical Profile:

A—0 to 2 inches; fine sandy loam C—2 to 11 inches; fine sandy loam

2R—11 to 20 inches; unweathered bedrock

### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Galzuni and similar soils

Composition: About 5 percent

Slope: 5 to 8 percent

Drainage class: Well drained Ecological site: Clayey

Parkelei and similar soils

Composition: About 5 percent

Slope: 5 to 8 percent

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Bryway and similar soils

Composition: About 5 percent

Slope: 5 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# 351—Rock outcrop-Vessilla complex, 35 to 70 percent slopes

### **Map Unit Setting**

Elevation: 6,800 to 8,000 feet (2,073 to 2,438 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Mean annual air temperature: 46 to 49 degrees F (8.0

to 9.4 degrees C)

Frost-free period: 100 to 135 days

# **Map Unit Composition**

Rock outcrop: 60 percent

Vessilla and similar soils: 30 percent Minor components: 10 percent

## **Component Descriptions**

### Rock outcrop

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale. Slopes range from about 5 to 15 percent on treads (structural benches) to almost vertical cliffs on the risers (escarpment face).

### Vessilla soils

Landform: Escarpments on cuestas, escarpments on

Parent material: Eolian material and slope alluvium derived from sandstone

Slope: 35 to 50 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid)

Available water capacity: About 0.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)
Sodium adsorption ratio maximum: About 0 (nonsodic)
Ecological site: Draft Shallow Savannah 9-14" P.z.
Potential native vegetation: Gambel oak, antelope
bitterbrush, banana yucca, big sagebrush, blue
grama, broom snakeweed, buckwheat, little
bluestem, mountainmahogany, muttongrass,
oneseed juniper, prairie junegrass, sideoats grama

Land capability subclass (nonirrigated): 7s

Typical Profile:

A-0 to 5 inches; fine sandy loam

2R—5 to 20 inches; unweathered bedrock

### **Minor Components**

Rubble Land

Composition: About 3 percent

Depth to restrictive feature: 0 inches to bedrock

(lithic)

Mido and similar soils

Composition: About 3 percent

Slope: 5 to 10 percent

Drainage class: Excessively drained

Ecological site: Deep Sand

Toldohn and similar soils

Composition: About 2 percent

Slope: 20 to 35 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Clayey

Vessilla and similar soils

Composition: About 2 percent

Slope: 5 to 35 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

# 352—Zia sandy loam, 1 to 5 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,000 to 6,800 feet (1,829 to 2,073 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Zia and similar soils: 80 percent Minor components: 20 percent

## **Component Descriptions**

### Zia soils

Geomorphic position: Stream terraces on valley floors

and alluvial fans on valley sides

Parent material: Eolian material and fan and stream

alluvium derived from sandstone

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 7.1 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Sandy

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, fourwing saltbush, sand dropseed, needleandthread, spike dropseed, winterfat, galleta, ring muhly, rabbitbrush, sand

sagebrush, spineless horsebrush

Land capability (irrigated): 3e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

Typical Profile:

A-0 to 3 inches; sandy loam

C1—3 to 31 inches; sandy loam C2—31 to 65 inches; fine sandy loam

### **Minor Components**

Mido and similar soils

Composition: About 10 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Ecological site: Deep Sand

Penistaja and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Aquima and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 353—Mido loamy fine sand, 1 to 6 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,300 to 6,700 feet (1,920 to 2,042 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Mido and similar soils: 90 percent Minor components: 10 percent

### **Component Descriptions**

## Mido soils

Geomorphic position: Dunes on valley sides and valley

floors

Parent material: Eolian material derived from

sandstone

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 6.00 in/hr (rapid)

Available water capacity: About 4.8 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Negligible

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Deep Sand

Present native vegetation: Indian ricegrass, blue grama, antelope bitterbrush, broom

snakeweed, fourwing saltbush, sand dropseed,

sandhill muhly

Land capability (irrigated): 3e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

Typical Profile:

A—0 to 3 inches; loamy fine sand C—3 to 65 inches; loamy fine sand

## **Minor Components**

Redpen and similar soils

Composition: About 5 percent

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Fragua and similar soils

Composition: About 5 percent

Slope: 1 to 6 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy Slopes

# 354—Knifehill loam, 1 to 5 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,900 to 7,500 feet (2,103 to 2,286 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Knifehill and similar soils: 80 percent Minor components: 20 percent

## **Component Descriptions**

#### Knifehill soils

Geomorphic position: Stream terraces on valley floors

and fan remnants on valley sides

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 9.4 inches (high)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Meadow

Present native vegetation: western wheatgrass, rush, sedge, slender wheatgrass, California brome,

muttongrass, willow
Land capability (irrigated): 3c
Land capability (nonirrigated): 4c
Conservation Tree/Shrub Group: 4C

Typical Profile:

A—0 to 2 inches; loam
Bw—2 to 6 inches; clay loam
Bt1—6 to 11 inches; clay loam
Bt2—11 to 26 inches; clay
Btk—26 to 35 inches; clay
Bk—35 to 65 inches; clay

### **Minor Components**

Silcat and similar soils

Composition: About 10 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Parkelei and similar soils

Composition: About 10 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 355—Rizno-Tekapo-Rock outcrop complex, 2 to 45 percent slopes

### Map Unit Setting

*MLRA:* 36

Elevation: 6,200 to 6,700 feet (1,890 to 2,042 meters)
Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 54 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Rizno and similar soils: 35 percent Tekapo and similar soils: 30 percent

Rock outcrop: 20 percent Minor components: 15 percent

# **Component Descriptions**

### Rizno soils

Geomorphic position: Structural benches on escarpments on cuestas and mesas

Parent material: Eolian material over residuum derived

from sandstone Slope: 2 to 20 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 0.9 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow Sandstone

Present native vegetation: Indian ricegrass, New Mexico feathergrass, blue grama, little bluestem, sideoats grama, Bigelow's sagebrush, fourwing saltbush, galleta, sand dropseed, antelope bitterbrush, cliffrose, Mormon tea, oneseed

juniper

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10 Typical Profile:

A—0 to 3 inches; fine sandy loam C—3 to 8 inches; sandy loam 2R—8 inches; sandstone bedrock

#### Tekapo soils

Geomorphic position: Escarpments on mesas and

Parent material: Slope alluvium and colluvial material over residuum derived from shale and siltstone

Slope: 10 to 45 percent

Surface fragments: About 20 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shale Hills

Present native vegetation: alkali sacaton, galleta, Indian ricegrass, blue grama, bottlebrush squirreltail, fourwing saltbush, little bluestem, needleandthread, sideoats grama, western wheatgrass, mound saltbush, shadscale saltbush, Bigelow's sagebrush, oneseed juniper, winterfat

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

Typical Profile:

A-0 to 2 inches; channery silty clay loam

C—2 to 10 inches; silty clay 2Cr—10 inches; shale

### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

#### **Minor Components**

Aguima and similar soils

Composition: About 5 percent

Slope: 2 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Mido and similar soils

Composition: About 5 percent

Slope: 2 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Ecological site: Deep Sand

Monpark and similar soils

Composition: About 5 percent

Slope: 2 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Clayey

# 357—Heshotauthla clay, 0 to 1 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,300 to 7,000 feet (1,920 to 2,134 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

# **Map Unit Composition**

Heshotauthla and similar soils: 85 percent

Minor components: 15 percent

### **Component Descriptions**

## Heshotauthla soils

Geomorphic position: Stream terraces on valley floors and flood plains on valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope: 0 to 1 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow) Available water capacity: About 5.4 inches (low) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Occasional

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: About 1 percent

Salinity maximum: About 16 mmhos/cm (moderately

saline)

Sodicity maximum: About 40 SAR (strongly sodic)

Ecological site: Salty Bottomland

Present native vegetation: alkali sacaton, western wheatgrass, fourwing saltbush, big sagebrush, blue grama, bottlebrush squirreltail, greasewood, inland

saltgrass, mat muhly, rabbitbrush Land capability (irrigated): 4w

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 3 inches; clay Btn—3 to 18 inches; clay Btkz—18 to 65 inches; clay

### **Minor Components**

Hosta and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Knifehill and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

Concho and similar soils

Composition: About 5 percent

Slope: 0 to 2 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

# 360—Hosta-Concho association, 0 to 5 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,800 to 7,000 feet (2,073 to 2,134 meters)
Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Hosta and similar soils: 45 percent

Concho and similar soils: 40 percent Minor components: 15 percent

### **Component Descriptions**

### Hosta soils

Geomorphic position: Drainageways and fan remnants

on valley sides

Parent material: Fan alluvium derived from sandstone

and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 10.0 inches (high)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: western wheatgrass, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, oneseed juniper, winterfat, broom snakeweed, muttongrass, rabbitbrush,

spineless horsebrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

### Typical Profile:

A—0 to 2 inches; loam
Bt—2 to 4 inches; clay loam
Btk1—4 to 24 inches; clay loam
Btk2—24 to 51 inches; clay

Bk—51 to 65 inches; sandy clay loam

### Concho soils

Geomorphic position: Drainageways and stream

terraces on valley floors

Parent material: Fan and stream alluvium derived from

sandstone and shale Slope: 0 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.9 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, needleandthread, winterfat, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, pingue hymenoxys, rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

### Typical Profile:

Ap1—0 to 1 inches; clay loam Ap2—1 to 5 inches; clay Btss—5 to 32 inches; clay Btkss—32 to 51 inches; clay Btkz—51 to 65 inches; clay

### **Minor Components**

Fraguni and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy

Parkelei and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Loamy

Silcat and similar soils

Composition: About 5 percent

Slope: 0 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

# 361—Monpark silty clay, 2 to 8 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,000 to 7,000 feet (1,829 to 2,134 meters)

Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

## **Map Unit Composition**

Monpark and similar soils: 80 percent Minor components: 20 percent

### **Component Descriptions**

## Monpark soils

Geomorphic position: Hills and valley sides

Parent material: Slope alluvium over residuum derived

from shale Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 4.1 inches (low) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 4 mmhos/cm (very slightly

saline)

Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, alkali sacaton, blue grama, galleta, Indian ricegrass, fourwing saltbush, winterfat, bottlebrush squirreltail, rabbitbrush, broom snakeweed

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CK

#### Typical Profile:

A—0 to 4 inches; silty clay BC—4 to 7 inches; silty clay 2BCss—7 to 27 inches; clay 2Cr—27 inches; shale

## **Minor Components**

Tekapo and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Shale Hills

Rizno and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone

Venadito and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Clayey Bottomland

Aguima and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 365—Vessilla-Rock outcrop complex, 2 to 15 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,500 to 8,000 feet (1,981 to 2,469 meters)
Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

### **Map Unit Composition**

Vessilla and similar soils: 55 percent

Rock outcrop: 35 percent Minor components: 10 percent

### **Component Descriptions**

## Vessilla soils

Geomorphic position: Summits on mesas and

dipslopes on cuestas

Parent material: Eolian material derived from

sandstone

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 2.00 in/hr (moderately

rapid)

Available water capacity: About 2.1 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Bigelow's sagebrush, blue grama, fourwing saltbush, Indian ricegrass, New Mexico feathergrass, galleta, little bluestem, sideoats grama, winterfat, cliffrose, Mormon tea,

oneseed juniper, twoneedle pinyon Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 2 inches; fine sandy loam Ck1—2 to 6 inches; fine sandy loam Ck2—6 to 15 inches; fine sandy loam R—15 to 20 inches; sandstone bedrock

### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

### **Minor Components**

Arabrab and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Evpark and similar soils

Composition: About 3 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Parkelei and similar soils

Composition: About 2 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# 366—Bosonoak loam, 1 to 5 percent slopes

### **Map Unit Setting**

MLRA:

Elevation: 6,500 to 7,000 feet (1,981 to 2,134 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

**Map Unit Composition** 

Bosonoak and similar soils: 95 percent

Minor components: 5 percent

**Component Descriptions** 

Bosonoak soils

Geomorphic position: Fan remnants on valley sides

and drainageways

Parent material: Fan alluvium derived from siltstone

and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.8 inches (high)

Shrink-swell potential: About 2.0 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Loamy

Present native vegetation: western wheatgrass, Indian ricegrass, big sagebrush, blue grama, galleta,

winterfat, rubber rabbitbrush, oneseed juniper,

twoneedle pinyon

Land capability (nonirrigated): 6c

Conservation Tree/Shrub Group: 4C

Typical Profile:

A-0 to 2 inches; loam

Bt—2 to 5 inches; clay loam

Btk1—5 to 28 inches; clay loam

Btk2-28 to 40 inches; loam

Btk3—40 to 63 inches; loam

Btk4-63 to 80 inches; silt loam

### **Minor Components**

Royosa and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Ecological site: Sandy Plains

# 367—Chunkmonk very gravelly fine sandy loam, 2 to 10 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 7,000 to 7,700 feet (2,134 to 2,347 meters)
Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Chunkmonk and similar soils: 85 percent

Minor components: 15 percent

### **Component Descriptions**

## Chunkmonk soils

Geomorphic position: Dipslopes on cuestas

Parent material: Eolian material and slope alluvium

over residuum derived from sandstone and

limestone

Slope: 2 to 10 percent

Surface fragments: About 50 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 1.3 inches (very low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 40 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, muttongrass, oneseed juniper, pingue hymenoxys, prairie junegrass, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 1 inches; very gravelly fine sandy loam

Btk1—1 to 4 inches; very cobbly loam Btk2—4 to 8 inches; gravelly loam Btk3—8 to 10 inches; gravelly loam R—10 inches; limestone bedrock

### **Minor Components**

Evpark and similar soils

Composition: About 10 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Losegate and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# 368—Simitarq-Celavar sandy loams, 2 to 8 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 7,200 to 8,100 feet (2,195 to 2,469 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

### **Map Unit Composition**

Simitarq and similar soils: 60 percent Celavar and similar soils: 20 percent Minor components: 20 percent

## **Component Descriptions**

#### Simitarq soils

Geomorphic position: Summits on mesas and

dipslopes on cuestas

Parent material: Eolian material and slope alluvium

over residuum derived from sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow

Available water capacity: About 2.1 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)

Sodicity maximum: None

Ecological site: Pinyon-Juniper Forest Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 1 inches; sandy loam
Bt1—1 to 6 inches; sandy clay loam
Bt2—6 to 14 inches; sandy clay
R—14 inches; sandstone bedrock

## Celavar soils

Geomorphic position: Summits on mesas and

dipslopes on cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 4.3 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Pinyon-Juniper Forest

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6D

#### Typical Profile:

Oi-0 to 1 inches;

A-1 to 2 inches; sandy loam

Bt—2 to 11 inches; sandy clay loam

Btk1—11 to 27 inches; sandy clay loam

Btk2—27 to 31 inches; sandy clay loam R—31 inches; sandstone bedrock

### **Minor Components**

Rock outcrop

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Fikel and similar soils

Composition: About 6 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Tuces and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# 375—Todest-Shadilto complex, 2 to 8 percent slopes

# **Map Unit Setting**

MLRA: 36

Elevation: 7,000 to 7,700 feet (2,134 to 2,347 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

### **Map Unit Composition**

Todest and similar soils: 60 percent Shadilto and similar soils: 25 percent Minor components: 15 percent

### **Component Descriptions**

## **Todest soils**

Geomorphic position: Dipslopes on cuestas

Parent material: Eolian material and slope alluvium

derived from limestone and sandstone

Slope: 2 to 8 percent

Surface fragments: About 55 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 3.8 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

reet

Runoff class: Medium

Calcium carbonate maximum: About 80 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Savannah

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, needleandthread, oneseed juniper, sand dropseed, twoneedle pinyon, muttongrass, rabbitbrush, winterfat, Bigelow's sagebrush, bottlebrush squirreltail, spineless horsebrush

Land capability (nonirrigated): 6e Conservation Tree/Shrub Group: 6DK

### Typical Profile:

A—0 to 1 inches; fine sandy loam BAt—1 to 3 inches; fine sandy loam Btk1—3 to 10 inches; sandy clay loam Btk2—10 to 18 inches; sandy clay loam

Bk-18 to 25 inches; loam

2R—25 inches; limestone bedrock

#### Shadilto soils

Geomorphic position: Dipslopes on cuestas

Parent material: Eolian material over residuum derived from limestone and sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately rapid)

Available water capacity: About 1.6 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 80 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow

Present native vegetation: New Mexico feathergrass, blue grama, sideoats grama, Indian ricegrass, bottlebrush squirreltail, little bluestem, western wheatgrass, galleta, sand dropseed, threeawn, oneseed juniper, twoneedle pinyon

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

## Typical Profile:

A-0 to 1 inches; very gravelly sandy loam

Bk1—1 to 9 inches; sandy loam Bk2—9 to 13 inches; sandy loam Bk3—13 to 15 inches; sandy loam R—15 inches: limestone bedrock

### **Minor Components**

Flugle and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# Evpark and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

## Arabrab and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

# 376—Todest fine sandy loam, 2 to 8 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 7,000 to 7,700 feet (2,134 to 2,347 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

#### **Map Unit Composition**

Todest and similar soils: 80 percent Minor components: 20 percent

### **Component Descriptions**

#### **Todest soils**

Geomorphic position: Dipslopes on cuestas

Parent material: Eolian material and slope alluvium

derived from limestone and sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 3.4 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 80 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Savannah

Present native vegetation: blue grama, western wheatgrass, Indian ricegrass, needleandthread, oneseed juniper, sand dropseed, twoneedle pinyon, muttongrass, rabbitbrush, winterfat, Bigelow's sagebrush, bottlebrush squirreltail, spineless horsebrush

Land capability (nonirrigated): 6e Conservation Tree/Shrub Group: 6KK

### Typical Profile:

A—0 to 1 inches; fine sandy loam
Btk1—1 to 8 inches; sandy clay loam
Btk2—8 to 14 inches; sandy clay loam
Bk—14 to 24 inches; cobbly sandy clay loam
2R—24 inches: limestone bedrock

### **Minor Components**

Shadilto and similar soils

Composition: About 10 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow

Celavar and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Savannah

Atarque and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

# 380—Berryhill-Casamero clays, 2 to 10 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 7,000 to 7,800 feet (2,134 to 2,377 meters) Mean annual precipitation: 10 to 13 inches (254 to 330

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 120 to 140 days

### **Map Unit Composition**

Berryhill and similar soils: 50 percent Casamero and similar soils: 45 percent

Minor components: 5 percent

#### **Component Descriptions**

## **Berryhill soils**

Geomorphic position: Depressions on valley floors,

sideslopes on hills, and valley sides

Parent material: Slope alluvium derived from shale

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None Ponding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 35 percent

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 8 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, alkali sacaton, blue grama, galleta, Indian ricegrass, fourwing saltbush, winterfat, bottlebrush squirreltail, rabbitbrush, broom snakeweed

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CC

Typical Profile:

A—0 to 2 inches; clay Bw—2 to 12 inches; clay Bssyz1—12 to 26 inches; clay Bssyz2—26 to 39 inches; clay Bssyz3—39 to 70 inches; clay

#### Casamero soils

Geomorphic position: Sideslopes on hills and valley

Parent material: Slope alluvium over residuum derived

from shale Slope: 2 to 10 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow)

Available water capacity: About 2.5 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: About 5 percent

Salinity maximum: About 8 mmhos/cm (slightly saline) Sodicity maximum: About 5 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, alkali sacaton, blue grama, galleta, Indian ricegrass, fourwing saltbush, winterfat, bottlebrush squirreltail, rabbitbrush, broom snakeweed

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 3 inches; clay Bss—3 to 11 inches; clay Bssyz—11 to 18 inches; clay Cr—18 inches; shale

#### **Minor Components**

Marianolake and similar soils

Composition: About 3 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Loamy

Rock outcrop

Composition: About 2 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

# 385—Mcorreon-Rock outcrop complex, 10 to 40 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,500 to 8,600 feet (1,981 to 2,621 meters) Mean annual precipitation: 13 to 16 inches (330 to 406

millimeters)

Average annual air temperature: 47 to 53 degrees F (8

to 12 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Mcorreon and similar soils: 65 percent

Rock outcrop: 20 percent Minor components: 15 percent

## **Component Descriptions**

#### Mcorreon soils

Geomorphic position: Escarpments on lava plateaus Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope: 10 to 40 percent

Surface fragments: About 80 percent

Depth to restrictive feature: Greater than 60 inches to

bedrock

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 50 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

### Typical Profile:

A-0 to 2 inches; extremely cobbly loam

Bt1—2 to 5 inches; clay loam Bt2—5 to 16 inches; clay Btk1—16 to 22 inches; clay Btk2—22 to 70 inches; clay R—70 inches; basalt bedrock

### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Flugle and similar soils

Composition: About 5 percent

Slope: 5 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

#### Cabezon and similar soils

Composition: About 5 percent

Slope: 5 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

# Toldohn and similar soils

Composition: About 3 percent Slope: 10 to 40 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

### Vessilla and similar soils

Composition: About 2 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone

# 390—Banquito very fine sandy loam, 1 to 3 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 7,200 to 7,800 feet (2,195 to 2,377 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 47 to 53 degrees F (8

to 12 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Banquito and similar soils: 90 percent Minor components: 10 percent

## **Component Descriptions**

## Banquito soils

Geomorphic position: Lava plateaus

Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope: 1 to 3 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 5.5 inches (low) Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 55 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Limy

Present native vegetation: western wheatgrass, blue grama, needleandthread, winterfat, Indian ricegrass, bottlebrush squirreltail, fourwing saltbush, twoneedle pinyon, broom snakeweed, oneseed juniper, rabbitbrush,

spineless horsebrush Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6DK

#### Typical Profile:

A—0 to 2 inches; very fine sandy loam

Btk1—2 to 9 inches; clay loam

Btk2—9 to 17 inches; loam

Bk1—17 to 22 inches; sandy clay loam Bk2—22 to 36 inches; sandy loam 2R—36 inches; basalt bedrock

#### **Minor Components**

Flugle and similar soils

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

# 395—Cabezon-Mcorreon complex, 2 to 8 percent slopes

### Map Unit Setting

MLRA:36

Elevation: 6,800 to 8,000 feet (2,073 to 2,438 meters) Mean annual precipitation: 14 to 16 inches (356 to 406

millimeters)

Average annual air temperature: 47 to 53 degrees F (8

to 12 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Cabezon and similar soils: 60 percent Mcorreon and similar soils: 30 percent

Minor components: 10 percent

# **Component Descriptions**

### Cabezon soils

Geomorphic position: Summits on lava plateaus Parent material: Eolian material over residuum from

basalt

Slope: 2 to 8 percent

Surface fragments: About 50 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 2.1 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 0 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; very cobbly loam Bt1—2 to 6 inches; clay loam

Bt2-6 to 14 inches; clay

Crk—14 to 17 inches; weathered bedrock

R—17 inches; basalt bedrock

#### Mcorreon soils

Geomorphic position: Summits on lava plateaus
Parent material: Eolian material and slope alluvium
over residuum derived from basalt

Slope: 2 to 8 percent

Depth to restrictive feature: Greater than 60 inches to

bedrock

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 10.4 inches (high)
Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 50 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

## Typical Profile:

A—0 to 2 inches; loam
Bt1—2 to 13 inches; clay
Bt2—13 to 19 inches; clay
Btk—19 to 27 inches; clay loam
Bk—27 to 70 inches; clay loam
R—70 inches; basalt bedrock

### **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Banquito and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Limy

# 400—Shoemaker-Stozuni complex, 2 to 8 percent slopes

### Map Unit Setting

MLRA: 39

Elevation: 7,000 to 7,600 feet (2,134 to 2,303 meters)
Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

# **Map Unit Composition**

Shoemaker and similar soils: 45 percent Stozuni and similar soils: 35 percent Minor components: 20 percent

# **Component Descriptions**

#### Shoemaker soils

Geomorphic position: Summits on mesas and

dipslopes on cuestas

Parent material: Eolian and slope alluvium derived from

sandstone and shale Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Moderately well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 4.1 inches (low)
Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, blue grama, bottlebrush squirreltail, mountain

muhly, muttongrass, prairie junegrass

Land capability (nonirrigated): 6e Conservation Tree/Shrub Group: 6D

Typical Profile:

A—0 to 2 inches; loamy fine sand

Bt1—2 to 7 inches; fine sandy loam Bt2—7 to 20 inches; sandy clay loam Bt3—20 to 28 inches; sandy clay loam 2R—28 inches; sandstone bedrock

#### Stozuni soils

Geomorphic position: Summits on mesas and dipslopes on cuestas

Parent material: Eolian material and slope alluviim derived from sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately

Available water capacity: About 2.1 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, prairie junegrass

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

# Typical Profile:

A—0 to 2 inches; sandy loam C1—2 to 10 inches; fine sandy loam C2—10 to 15 inches; fine sandy loam 2R—15 inches; sandstone bedrock

### **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Knifehill and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

Zunalei and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Ponderosa Forest

Valnor and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Ponderosa Forest

# 403—Valnor-Techado complex, 2 to 25 percent slopes

## **Map Unit Setting**

MLRA: 39

Elevation: 7,100 to 7,800 feet (2,164 to 2,377 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

# **Map Unit Composition**

Valnor and similar soils: 50 percent Techado and similar soils: 30 percent Minor components: 20 percent

### **Component Descriptions**

## Valnor soils

Geomorphic position: Sideslopes on hills and ridges Parent material: Slope alluvium derived from shale

Slope: 2 to 15 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 5.3 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's

oak, blue grama, bottlebrush squirreltail,

buckwheat, mountainmahogany, mountain muhly,

muttongrass, rabbitbrush Land capability (nonirrigated): 6e Conservation Tree/Shrub Group: 4C

### Typical Profile:

A—0 to 2 inches; clay loam Bw-2 to 4 inches; clay loam Bt-4 to 20 inches; clay 2Ck-20 to 34 inches; clay 2Cr-34 inches; shale

#### Techado soils

Geomorphic position: Sideslopes on hills and ridges Parent material: Slope alluvium and colluvium over residuum derived from shale

Slope: 5 to 25 percent

Surface fragments: About 25 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 1.9 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's

oak, blue grama, bottlebrush squirreltail,

buckwheat, mountainmahogany, mountain muhly,

muttongrass, rabbitbrush Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 3 inches; gravelly clay 2C-3 to 13 inches; clay 2Cr—13 inches; shale

### **Minor Components**

Zunalei and similar soils Composition: About 5 percent Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Knifehill and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

Shoemaker and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Moderately well drained Ecological site: Ponderosa Pine Forest

Stozuni and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Ponderosa Pine Forest

# 404—Rock outcrop-Techado-Stozuni complex, 5 to 60 percent slopes

#### Map Unit Setting

Elevation: 6,600 to 8,000 feet (2,012 to 2,438 meters) Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

Mean annual air temperature: 40 to 45 degrees F (4.4

to 7.0 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Rock outcrop: 35 percent

Techado and similar soils: 35 percent Stozuni and similar soils: 25 percent Minor components: 5 percent

## **Component Descriptions**

#### Rock outcrop

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale. Slopes range from about 5 to 15 percent on treads (structural benches) to almost vertical cliffs on the risers (escarpment face).

#### Techado soils

Landform: Sideslopes on hills and ridges, and escarpments on cuestas and mesas

Parent material: Slope alluvium and colluvium over

residuum derived from shale

Slope: 5 to 60 percent

Surface fragments: About 15 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: .06 to 0.2 in/hr (slow)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 7.5 percent (high)

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 1 (slightly

sodic)

Ecological site: Ponderosa Pine Forest

Potential native vegetation:

Common trees: alligator juniper, Rocky Mountain juniper, Gambel oak, twoneedle pinyon,

ponderosa pine, Douglas-fir

Other plants: Arizona fescue, Gambel oak, blue grama, bottlebrush squirreltail, buckwheat, mountainmahogany, mountain muhly,

muttongrass, rabbitbrush

Land capability subclass (nonirrigated): 8

Typical Profile:

A-0 to 5 inches; channery clay loam

C1—5 to 8 inches; clay C2—8 to 17 inches; clay

2R—17 to 20 inches; weathered bedrock

#### Stozuni soils

Landform: Summits on hills and ridges and structural

benches on escarpments

Parent material: Eolian material and slope alluvium

derived from sandstone *Slope:* 5 to 15 percent

Surface fragments: About 25 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Somewhat excessively drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid) Available water capacity: About 0.7 inches (very low)

Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 0 (nonsodic)

Ecological site: Ponderosa Pine Forest

Potential native vegetation:

Common trees: Rocky Mountain juniper, alligator juniper, twoneedle pinyon, Gambel oak,

ponderosa pine, Douglas-fir

Other plants: Arizona fescue, Gambel oak, blue grama, bottlebrush squirreltail, buckwheat, mountainmahogany, mountain muhly,

muttongrass, rabbitbrush

Land capability subclass (nonirrigated): 7s

Typical Profile:

A-0 to 1 inch; gravelly sandy loam

C—1 inch to 7 inches; gravelly sandy loam R—7 to 20 inches; unweathered bedrock

# **Minor Components**

Valnor and similar soils

Composition: About 3 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Asaayi and similar soils

Composition: About 2 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

# 405—Fortwingate-Owlrock complex, 2 to 8 percent slopes

# Map Unit Setting

MLRA: 39

Elevation: 7,200 to 8,200 feet (2,195 to 2,499 meters)
Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

### **Map Unit Composition**

Fortwingate and similar soils: 50 percent Owlrock and similar soils: 35 percent Minor components: 15 percent

## **Component Descriptions**

## Fortwingate soils

Geomorphic position: Dipslopes on cuestas

Parent material: Slope alluvium over residuum derived from sandstone, shale, and dolomitic limestone

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 3.6 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, Kentucky bluegrass, Rocky Mountain juniper, antelope bitterbrush, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, pine dropseed, prairie junegrass, twoneedle pinyon

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

#### Typical Profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 4 inches; loam Bt—4 to 9 inches; clay loam

Btss—9 to 26 inches; clay

2R—26 inches; sandstone and limestone bedrock

### **Owlrock soils**

Geomorphic position: Dipslopes on cuestas Parent material: Residuum derived from dolomitic

limestone

Slope: 2 to 8 percent

Surface fragments: About 55 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 1.7 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 20 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, Rocky Mountain juniper, barberry, blue grama, bottlebrush squirreltail, buckwheat, little bluestem, mountain muhly, muttongrass, sideoats grama

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 1 inches; very gravelly loam Btk1—1 to 6 inches; very cobbly loam Btk2—6 to 13 inches; very cobbly loam R—13 inches; limestone bedrock

### **Minor Components**

### Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

### Asaayi and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## Osoridge and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

# 406—Polich silt loam, 0 to 3 percent slopes

# Map Unit Setting

MLRA: 39

Elevation: 7,600 to 8,000 feet (2,316 to 2,438 meters)
Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days



Figure 10.—Typical landscape of Polich silt loam, 0 to 3 percent slopes. These soils have a seasonally high water table and provide good livestock grazing. In the background is the Cinnadale-Heckly association, 5 to 40 percent slopes.

## **Map Unit Composition**

Polich and similar soils: 90 percent Minor components: 10 percent

## **Component Descriptions**

#### Polich soils

Geomorphic position: Flood plains on valley floors (fig. 10)

Parent material: Stream alluvium derived from sandstone, granite, and limestone

Slope: 0 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Somewhat poorly drained

Slowest permeability: About 0.06 in/hr (moderately

Available water capacity: About 11.5 inches (high) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Frequent

Seasonal water table minimum depth: About 33 inches

Runoff class: Low

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Meadow

Present native vegetation: redtop, sedge, Rocky Mountain iris, bottlebrush squirreltail, muttongrass,

plantain, Kentucky bluegrass, rush, western wheatgrass, clover, smooth brome, western yarrow Land capability (nonirrigated): 4w Conservation Tree/Shrub Group: 2

#### Typical Profile:

A—0 to 13 inches; silt loam Bw—13 to 23 inches; loam Bk1—23 to 40 inches; clay loam Bk2—40 to 48 inches; clay loam 2BCk1—48 to 58 inches; clay loam 2BCk2—58 to 70 inches; loam

#### **Minor Components**

Robolata and similar soils

Composition: About 5 percent

Slope: 0 to 3 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained

Ecological site: Mountain Grassland

Ligocki and similar soils

Composition: About 5 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 407—Cinnadale-Heckly association, 5 to 40 percent slopes

#### **Map Unit Setting**

MLRA: 39

Elevation: 7,800 to 8,200 feet (2,377 to 2,499 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Cinnadale and similar soils: 50 percent Heckly and similar soils: 35 percent Minor components: 15 percent

## **Component Descriptions**

### Cinnadale soils

Geomorphic position: Summits on hills and ridges Parent material: Slope alluvium over residuum derived from sandstone

Slope: 5 to 15 percent

Surface fragments: About 45 percent gravel

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 2.00 in/hr (moderately

rapid)

Available water capacity: About 1.4 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Fendler's ceanothus, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, pine dropseed,

prairie junegrass, yucca Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

#### Typical Profile:

A—0 to 2 inches; very channery fine sandy loam Bw1—2 to 9 inches; very channery fine sandy loam Bw2—9 to 15 inches; very channery fine sandy loam

R—15 inches; sandstone bedrock

### **Heckly soils**

Geomorphic position: Sideslopes on hills and ridges Parent material: Slope alluvium over residuum derived

from sandstone and siltstone

Slope: 5 to 40 percent

Surface fragments: About 65 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 5.2 inches (low)
Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, pine dropseed, pingue

hymenoxys

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

#### Typical Profile:

A—0 to 3 inches; extremely channery sandy loam

Bt1-3 to 15 inches; channery clay

Bt2—15 to 38 inches; very channery silty clay

R-38 inches: shale and siltstone

#### **Minor Components**

#### Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments

Asaayi and similar soils

Composition: About 5 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Osoridge and similar soils

Composition: About 5 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 408—Mirabal-Zuni complex, 1 to 40 percent slopes

### **Map Unit Setting**

MLRA: 39

Elevation: 7,800 to 8,200 feet (2,377 to 2,499 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F

(4 to 7 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Mirabal and similar soils: 50 percent Zuni and similar soils: 40 percent Minor components: 10 percent

#### **Component Descriptions**

#### Mirabal soils

Geomorphic position: Sideslopes on mountains Parent material: Colluvial material over residuum

derived from gneissic granite

Slope: 5 to 40 percent

Surface fragments: About 90 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 2.00 in/hr (moderately

rapid)

Available water capacity: About 1.6 inches (very

iow)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: None

Gvpsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Forest

Present native vegetation: Arizona fescue, Fendler's ceanothus, Gambel's oak, bottlebrush squirreltail,

little bluestem, mountain muhly, muttongrass, pine

dropseed

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 10

## Typical Profile:

Oi—0 to 1 inches; slightly decomposed plant material

A-1 to 2 inches; extremely gravelly loamy sand

AC—2 to 6 inches; gravelly sandy loam

C1—6 to 13 inches; very gravelly sandy loam

C2—13 to 30 inches; extremely gravelly sandy loam

R-30 inches; gneissic-granite bedrock

#### Zuni soils

Geomorphic position: Summits on mountain Parent material: Residuum derived from gneissic

granite

Slope: 1 to 15 percent

Surface fragments: About 31 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 3.3 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, blue grama, bottlebrush squirreltail, mountain

muhly, muttongrass, pine dropseed

Land capability (nonirrigated): 6s Conservation Tree/Shrub Group: 4C

#### Typical Profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 3 inches; gravelly sandy loam Bt1—3 to 18 inches; gravelly sandy clay Bt2—18 to 27 inches; gravelly sandy clay R—27 inches; gneissic-granite bedrock

## **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Asaayi and similar soils

Composition: About 5 percent

Slope: 1 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 409—Rauster-Rock outcrop complex, 5 to 35 percent slopes

#### **Map Unit Setting**

MLRA: 39

Elevation: 7,100 to 8,000 feet (2,164 to 2,438 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

#### Map Unit Composition

Rauster and similar soils: 60 percent

Rock outcrop: 30 percent Minor components: 10 percent

#### **Component Descriptions**

#### Rauster soils

Geomorphic position: Sideslopes of hills and ridges

and escarpments on cuestas

Parent material: Slope alluvium over residuum derived

from sandstone and shale

Slope: 5 to 35 percent

Depth to restrictive feature: 40 to 60 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's

oak, Kentucky bluegrass, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, pine dropseed, prairie junegrass

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

### Typical Profile:

A—0 to 1 inches; clay loam Bt—1 to 5 inches; clay Bssk—5 to 28 inches; clay Bk—28 to 55 inches; clay Cr—55 inches; shale

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Morclay and similar soils

Composition: About 5 percent

Slope: 5 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Osoridge and similar soils

Composition: About 4 percent

Slope: 5 to 10 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Asaayi and similar soils

Composition: About 1 percent

Slope: 5 to 10 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 410—Montillo-Tsoodzil complex, 5 to 35 percent slopes

## Map Unit Setting

MLRA: 39

Elevation: 7,800 to 9,000 feet (2,377 to 2,743 meters)
Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Montillo and similar soils: 50 percent Tsoodzil and similar soils: 40 percent Minor components: 10 percent

### **Component Descriptions**

#### Montillo soils

Geomorphic position: Cinder cones and lava plateaus Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope: 5 to 15 percent

Surface fragments: About 36 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 4.2 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

#### Typical Profile:

A—0 to 3 inches; very gravelly loam Bt1—3 to 8 inches; silty clay loam Btss1—8 to 15 inches; silty clay Btss2—15 to 27 inches; clay

2Bt2—27 to 32 inches; very gravelly clay

2R—32 inches; basalt bedrock

#### **Tsoodzil soils**

Geomorphic position: Cinder cones and lava plateaus Parent material: Eolian material and slope alluvium derived from basalt

Slope: 5 to 35 percent

Surface fragments: About 46 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.2 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

### Typical Profile:

A—0 to 3 inches; very gravelly silt loam Bt—3 to 10 inches; silty clay loam Btss1—10 to 21 inches; clay Btss2—21 to 46 inches; clay

Btss3—46 to 70 inches; gravelly clay

### **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Canoneros and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow

## 411—Ligocki-Robolata complex, 1 to 5 percent slopes

## **Map Unit Setting**

MLRA: 39

Elevation: 7,700 to 8,000 feet (2,347 to 2,438 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

,

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

### **Map Unit Composition**

Ligocki and similar soils: 45 percent Robolata and similar soils: 35 percent Minor components: 20 percent

#### **Component Descriptions**

### Ligocki soils

Geomorphic position: Fan remnants on valley sides Parent material: Fan alluvium derived from sandstone, shale, and granite

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.9 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)
Ecological site: Ponderosa Pine Forest (fig. 11)
Procent native vegetation: Arizona foresus. Comboli

Present native vegetation: Arizona fescue, Gambel's oak, Kentucky bluegrass, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, pine

dropseed, prairie junegrass Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4 Typical Profile:

A—0 to 2 inches; fine sandy loam AB—2 to 8 inches; fine sandy loam

Bt1—8 to 21 inches; clay

2Btk1—21 to 30 inches; clay loam

2Btk2—30 to 41 inches; gravelly sandy clay loam

3Btk3—41 to 70 inches; sandy clay loam

#### Robolata soils

Geomorphic position: Stream terraces on valley floors Parent material: Stream alluvium derived from

sandstone, shale, and granite

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.8 inches (moderate) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: Occasional

Seasonal water table minimum depth: Greater than 6 feet



Figure 11.—Typical landscape of Logocki-Robolata complex, 1 to 5 percent slopes. Some areas of these soils have ben cleared of trees for use as high mountain pasture.

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Mountain Grassland

Present native vegetation: Arizona fescue, mountain muhly, blue grama, buckwheat, muttongrass, western wheatgrass, pingue hymenoxys, silvery lupine, spineless horsebrush, whorled plantain,

Gambel's oak, broom snakeweed Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

### Typical Profile:

A—0 to 6 inches; loam
Bt1—6 to 12 inches; loam
Bt2—12 to 20 inches; clay
2Bt3—20 to 30 inches; clay loam
2Btk—30 to 50 inches; sandy clay loam
2BC—50 to 70 inches; very gravelly sandy loam

## **Minor Components**

Polich and similar soils

Composition: About 10 percent

Slope: 0 to 3 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Somewhat poorly drained

Ecological site: Meadow

Mcgaffey and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Zuni and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 412—Rock outcrop-Rionutria-Zaster association, 15 to 80 percent slopes

#### **Map Unit Setting**

Elevation: 7,000 to 7,600 feet (2,134 to 2,316 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Mean annual air temperature: 40 to 45 degrees F (4.4

to 7.0 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Rock outcrop: 50 percent

Rionutria and similar soils: 25 percent Zaster and similar soils: 25 percent

#### **Component Descriptions**

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed limestone and shale. Slopes range from about 5 to 15 percent on treads (structural benches) to almost vertical cliffs on the risers (escarpment face).

#### Rionutria soils

Landform: Structural benches on escarpments
Parent material: Slope alluvium and colluvium over
residuum derived from sandstone, shale, and
limestone

Slope: 15 to 20 percent

Surface fragments: About 53 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: 0.2 to 0.6 in/hr (moderately slow) Available water capacity: About 2.8 inches (very low) Shrink-swell potential: About 4.5 percent (moderate)

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodium adsorption ratio maximum: About 0 (nonsodic)

Ecological site: Ponderosa Pine Forest

Potential native vegetation:

Common trees: Rocky Mountain juniper, Douglasfir, twoneedle pinyon, ponderosa pine Other plants: Arizona fescue, Gambel oak, Oregongrape, bottlebrush squirreltail,

buckwheat, mountainmahogany, mountain muhly, muttongrass, pine dropseed, ponderosa

pine, whortleleaf snowberry, yucca *Land capability subclass (nonirrigated):* 7s

#### Typical Profile:

A—0 to 3 inches; very gravelly loam

Btk1—3 to 12 inches; very cobbly clay loam Btk2—12 to 24 inches; very cobbly clay loam

R—24 to 40 inches: unweathered bedrock

#### Zaster soils

Landform: Structural benches on escarpments Parent material: Slope alluvium and colluvium derived

from sandstone and limestone

Slope: 15 to 40 percent

Surface fragments: About 75 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

Drainage class: Well drained

Slowest permeability: 2.0 to 6.0 in/hr (moderately rapid) Available water capacity: About 2.2 inches (very low) Shrink-swell potential: About 1.5 percent (low)

Runoff class: High

Calcium carbonate maximum: About 25 percent

Gvpsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 0 (nonsodic)

Ecological site: pinyon-juniper forest

Potential native vegetation:

Common trees: oneseed juniper, Rocky Mountain juniper, alligator juniper, twoneedle pinyon

Other plants: Gambel oak, antelope bitterbrush, blue grama, bottlebrush squirreltail, mountainmahogany, muttongrass, needlegrass,

oneseed juniper, prairie junegrass, twoneedle pinvon, vucca

Land capability subclass (nonirrigated): 7s

Typical Profile:

A—0 to 3 inches; extremely gravelly loam

Bk1—3 to 11 inches; gravelly loam

Bk2—11 to 27 inches; extremely gravelly loam

R—27 to 40 inches; unweathered bedrock

## 413—Morclay silty clay, 1 to 5 percent slopes

#### **Map Unit Setting**

MLRA: 39

Elevation: 7,400 to 7,800 feet (2,256 to 2,377 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

#### Map Unit Composition

Morclay and similar soils: 85 percent Minor components: 15 percent

## **Component Descriptions**

## Morclay soils

Geomorphic position: Stream terraces on valley floors

and alluvial fans on valley sides

Parent material: Slope alluvium over residuum derived

from shale

Slope: 1 to 5 percent

Depth to restrictive feature: Greater than 60 inches to

bedrock

Drainage class: Well drained

Slowest permeability: About 0.03 in/hr (very slow) Available water capacity: About 8.9 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gvpsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, needleandthread, Indian ricegrass, blue grama, bottlebrush squirreltail, galleta, pingue hymenoxys,

rabbitbrush

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CC

#### Typical Profile:

A—0 to 1 inches; silty clay

Bk1—1 to 5 inches; clay

Bssk—5 to 48 inches; clay

2Ck1—48 to 56 inches; clay

2Ck2—56 to 70 inches; clay

Cr-70 inches; shale

## **Minor Components**

Rauster and similar soils

Composition: About 10 percent

Slope: 3 to 5 percent

Depth to restrictive feature: 40 to 60 inches to

bedrock (paralithic) Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Fortwingate and similar soils

Composition: About 3 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Osoridge and similar soils

Composition: About 2 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 414—Zunalei-Corzuni loamy fine sands, 2 to 10 percent slopes

## **Map Unit Setting**

MLRA: 39

Elevation: 7,000 to 7,500 feet (2,134 to 2,286

meters)

Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 45 to 48 degrees F (7

to 9 degrees C)

Frost-free period: 90 to 110 days

### **Map Unit Composition**

Zunalei and similar soils: 50 percent Corzuni and similar soils: 40 percent Minor components: 10 percent

#### **Component Descriptions**

## Zunalei soils

Geomorphic position: Fan remnants on valley sides

and dipslopes on cuestas

Parent material: Eolian material and fan alluvium

derived from sandstone *Slope:* 2 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest Present native vegetation: blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, fringed sagewort, little bluestem, muttongrass,

needlegrass, pine dropseed, prairie junegrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

## Typical Profile:

A—0 to 1 inches; loamy fine sand AB—1 to 6 inches; fine sandy loam Bt1—6 to 20 inches; sandy clay loam Bt2—20 to 50 inches; fine sandy loam BCk—50 to 70 inches; fine sandy loam

#### Corzuni soils

Geomorphic position: Fan remnants on valley sides

and dipslopes on cuestas

Parent material: Eolian material and fan alluvium derived from sandstone

Slope: 2 to 10 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately

rapid)

Available water capacity: About 7.9 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Low

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, fringed sagewort, little bluestem, muttongrass,

needlegrass, pine dropseed, prairie

junegrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 3

### Typical Profile:

Oi—0 to 1 inches; slightly decomposed plant material

A—1 to 8 inches; loamy fine sand Bt1—8 to 29 inches; fine sandy loam Bt2—29 to 45 inches; fine sandy loam Bk—45 to 70 inches; fine sandy loam

## **Minor Components**

Knifehill and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Meadow

Fikel and similar soils

Composition: About 3 percent Slope: 2 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Clayey

Shoemaker and similar soils

Composition: About 2 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Moderately well drained Ecological site: Ponderosa Pine Forest

## 415—Tsoodzil-Rubble land complex, 10 to 55 percent slopes

## **Map Unit Setting**

MLRA: 39

Elevation: 7,600 to 9,000 feet (2,316 to 2,743 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

### **Map Unit Composition**

Tsoodzil and similar soils: 60 percent

Rubble land: 20 percent Minor components: 20 percent

## **Component Descriptions**

#### **Tsoodzil soils**

Geomorphic position: Escarpments on lava plateaus Parent material: Eolian material and slope alluvium

derived from basalt *Slope:* 10 to 55 percent

Surface fragments: About 45 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 8.0 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 2 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)
Ecological site: Ponderosa Pine Forest
Present native vegetation: blue grama, broom
snakeweed. little bluestem. muttongrass, pine

dropseed

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

## Typical Profile:

E—0 to 3 inches; very cobbly loam Bt—3 to 7 inches; clay loam Btss1—7 to 22 inches; gravelly clay Btss2—22 to 65 inches; clay

#### Rubble land

Rubble land consists of areas of cobbles, stones, and boulders. Most areas are at the base of escarpments.

Slope: 0 to 200 percent

Drainage class: Excessively drained

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Conservation Tree/Shrub Group: 10

#### **Minor Components**

Rock outcrop

Composition: About 9 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Montillo and similar soils

Composition: About 5 percent

Slope: 10 to 15 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Canoneros and similar soils

Composition: About 3 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

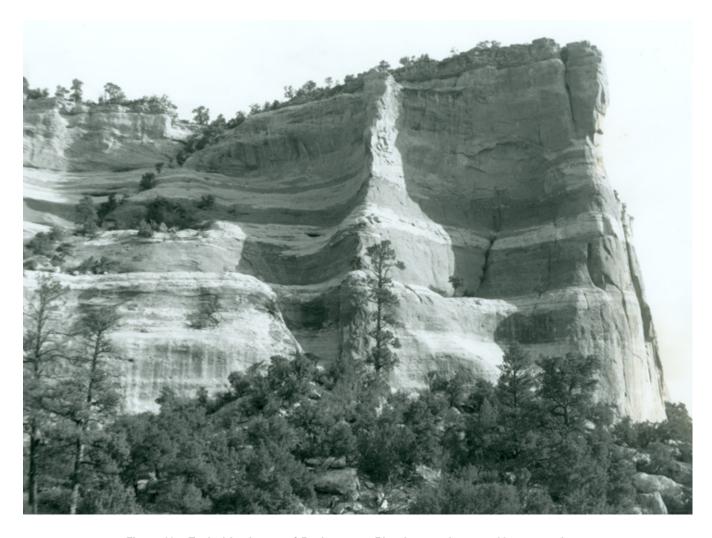


Figure 12.—Typical landscape of Rock outcrop-Bluesky complex, 5 to 80 percent slopes.

Drainage class: Well drained Ecological site: Shallow

Valnor and similar soils

Composition: About 3 percent Slope: 10 to 15 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 416—Rock outcrop-Bluesky complex, 5 to 80 percent slopes

## **Map Unit Setting**

Elevation: 7,100 to 7,700 feet (2,164 to 2,347 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Mean annual air temperature: 40 to 45 degrees F (4.4

to 7.0 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Rock outcrop: 70 percent

Bluesky and similar soils: 20 percent Minor components: 10 percent

## **Component Descriptions**

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone (fig. 12). Slopes range from about 5 to 15 percent on treads (structural benches) to almost vertical cliffs on the risers (escarpment face)

## **Bluesky soils**

Landform: Structural benches on escarpments Parent material: Eolian material and slope alluvium

derived from sandstone *Slope:* 5 to 20 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Excessively drained

Slowest permeability: Greater than 20 in/hr (very rapid) Available water capacity: About 0.5 inches (very low) Shrink-swell potential: About 1.5 percent (low)

Runoff class: Medium

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodium adsorption ratio maximum: About 0 (nonsodic)

Ecological site: Ponderosa Pine Forest

Potential native vegetation:

Common trees: Rocky Mountain juniper, Douglasfir, twoneedle pinyon, ponderosa pine

Other plants: Gambel oak, Indian ricegrass, blue grama, bottlebrush squirreltail, buckwheat, cliffrose, little bluestem, mountainmahogany, mountain muhly, muttongrass, pine dropseed, sideoats grama, yucca

Sideoais graina, yucca

Land capability subclass (nonirrigated): 8

Typical Profile:

A—0 to 5 inches; fine sand C—5 to 8 inches; fine sand R—8 inches; sandstone bedrock

#### **Minor Components**

Stozuni and similar soils

Composition: About 5 percent

Slope: 5 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively

drained

Ecological site: Ponderosa Pine Forest

Shoemaker and similar soils

Composition: About 3 percent

Slope: 5 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Moderately well drained Ecological site: Ponderosa Pine Forest

Royosa and similar soils

Composition: About 2 percent

Slope: 1 to 15 percent

Drainage class: Excessively drained Ecological site: Sandy Plains

## 418—Asaayi-Osoridge complex, 2 to 15 percent slopes

## **Map Unit Setting**

MLRA: 39

Elevation: 7,500 to 7,900 feet (2,286 to 2,408 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

### **Map Unit Composition**

Asaayi and similar soils: 40 percent Osoridge and similar soils: 35 percent Minor components: 25 percent

### **Component Descriptions**

## Asaayi soils

Geomorphic position: Dipslopes on cuestas Parent material: Slope alluvium derived from

sandstone and shale *Slope:* 2 to 15 percent

Surface fragments: About 50 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow

Available water capacity: About 2.4 inches (very low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Ponderosa Pine Forest

Present native vegetation: Gambel's oak, blue grama, bottlebrush squirreltail, buckwheat, cliffrose, little bluestem, mountainmahogany, mountain muhly,

pine dropseed, sideoats grama Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10 Typical Profile:

Oi—0 to 1 inches; slightly decomposed plant

A—1 to 3 inches; very gravelly fine sandy loam

Bt1—3 to 5 inches; fine sandy loam Bt2—5 to 16 inches; clay loam R—16 inches; sandstone bedrock

## Osoridge soils

Geomorphic position: Dipslopes on cuestas

Parent material: Slope alluvium over residuum derived

from sandstone and shale

Slope: 2 to 15 percent

Surface fragments: About 40 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 2.6 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Gambel's oak, blue grama, bottlebrush squirreltail, buckwheat, cliffrose, little bluestem, mountainmahogany, mountain muhly,

pine dropseed, sideoats grama Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 2 inches; very gravelly clay loam

Bt1—2 to 6 inches; clay Bt2—6 to 18 inches; clay R—18 inches; shale

**Minor Components** 

Cinnadale and similar soils

Composition: About 10 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Fortwingate and similar soils

Composition: About 10 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Rauster and similar soils

Composition: About 5 percent

Slope: 2 to 15 percent

Depth to restrictive feature: 40 to 60 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

# 419—Fortwingate-Cinnadale-Rock outcrop complex, 5 to 45 percent slopes

## Map Unit Setting

MLRA: 39

Elevation: 7,200 to 8,200 feet (2,195 to 2,499 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F

(4 to 7 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Fortwingate and similar soils: 35 percent Cinnadale and similar soils: 30 percent

Rock outcrop: 20 percent Minor components: 15 percent

## **Component Descriptions**

## Fortwingate soils

Geomorphic position: Sideslopes on hills, ridges, hogbacks and escarpments on cuestas

Parent material: Slope alluvium over residuum derived

from sandstone and shale

Slope: 5 to 45 percent

Surface fragments: About 45 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 3.8 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

eet

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, Gambel's oak, Kentucky bluegrass, blue grama, bottlebrush squirreltail, mountain muhly, muttongrass, pine

dropseed, prairie junegrass Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

### Typical Profile:

A-0 to 5 inches; very cobbly loam

Bt1-5 to 13 inches; clay Bt2—13 to 21 inches; clay loam 2Bt3—21 to 26 inches; clay loam R—26 inches; sandstone bedrock

#### Cinnadale soils

Geomorphic position: Sideslopes on hills, ridges, hogbacks and structural benches on escarpments on cuestas

Parent material: Slope alluvium over residuum derived from sandstone

Slope: 5 to 15 percent

Surface fragments: About 65 percent

Depth to restrictive feature: 10 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 2.00 in/hr (moderately

Available water capacity: About 0.8 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Ponderosa Pine Forest

Present native vegetation: Arizona fescue, blue grama, bottlebrush squirreltail, mountain muhly,

muttongrass, pine dropseed, prairie junegrass,

yucca

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

### Typical Profile:

A—0 to 6 inches; extremely stony sandy loam Bw—6 to 11 inches; very gravelly fine sandy loam

R—11 inches: sandstone bedrock

### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Osoridge and similar soils

Composition: About 8 percent

Slope: 5 to 15 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

Asaavi and similar soils

Composition: About 7 percent

Slope: 5 to 15 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Ponderosa Pine Forest

## 420—Seco clay loam, 1 to 5 percent slopes

## Map Unit Setting

MLRA: 39

Elevation: 8,000 to 8,400 feet (2,438 to 2,560 meters) Mean annual precipitation: 16 to 20 inches (406 to 508 millimeters)

Average annual air temperature: 40 to 45 degrees F (4)

to 7 degrees C)

Frost-free period: 90 to 110 days

### **Map Unit Composition**

Seco and similar soils: 85 percent Minor components: 15 percent

## **Component Descriptions**

#### Seco soils

Geomorphic position: Playas on valley floors Parent material: Alluvium derived from basalt

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Slowest permeability: About 0.01 in/hr (very slow) Available water capacity: About 9.0 inches (high) Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: Rare

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm

(nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Mountain Grassland

Present native vegetation: Arizona fescue, mountain muhly, blue grama, buckwheat, muttongrass, western wheatgrass, pingue hymenoxys, silvery lupine, spineless horsebrush, whorled plantain,

Gambel's oak, broom snakeweed Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CC

### Typical Profile:

A—0 to 3 inches; clay loam Bt—3 to 11 inches; clay Btss—11 to 23 inches; clay Btkss—23 to 58 inches; clay 2BCg—58 to 70 inches; clay

## **Minor Components**

Montillo and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow

Canoneros and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow

Chivato and similar soils

Composition: About 5 percent

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Ecological site: Playa

## 425—Montillo-Canoneros complex, 2 to 6 percent slopes

## **Map Unit Setting**

MLRA: 39

Elevation: 7,800 to 9,000 feet (2,377 to 2,743 meters)

Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Montillo and similar soils: 50 percent Canoneros and similar soils: 35 percent

Minor components: 15 percent

## **Component Descriptions**

#### Montillo soils

Geomorphic position: Cinder cones and lava plateaus Parent material: Slope alluvium over residuum derived

from basalt Slope: 2 to 6 percent

Surface fragments: About 20 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 3.7 inches (low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow

Present native vegetation: Arizona fescue, mountain muhly, blue grama, buckwheat, prairie junegrass, bottlebrush squirreltail, spineless horsebrush,

broom snakeweed

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

## Typical Profile:

A—0 to 2 inches; gravelly loam

Bt1—2 to 8 inches; clay

2Btss—8 to 18 inches; gravelly clay 2Bt2—18 to 35 inches; very cobbly clay

2R—35 inches: basalt bedrock

#### Canoneros soils

Geomorphic position: Cinder cones and lava plateaus Parent material: Slope alluvium over residuum derived

from basalt Slope: 2 to 6 percent

Surface fragments: About 40 percent

Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 2.0 inches (very low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow

Present native vegetation: Arizona fescue, mountain muhly, blue grama, buckwheat, prairie junegrass, bottlebrush squirreltail, spineless horsebrush,

broom snakeweed

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 2 inches; very cobbly loam

Bt1—2 to 8 inches; clay loam Bt2—8 to 13 inches; clay

2R—13 inches; basalt bedrock

## **Minor Components**

Rock outcrop

Composition: About 5 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on

ridges, ledges, and escarpments.

Tsoodzil and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Cinder Hills

Seco and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Mountain Grassland

## 430—Montillo gravelly loam, 2 to 6 percent slopes

### Map Unit Setting

MLRA: 39

Elevation: 7,800 to 9,000 feet (2,377 to 2,743 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

## **Map Unit Composition**

Montillo and similar soils: 80 percent Minor components: 20 percent

## **Component Descriptions**

#### Montillo soils

Geomorphic position: Summits on lava plateaus Parent material: Slope alluvium over residuum derived

from basalt Slope: 2 to 6 percent

Surface fragments: About 20 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 5.2 inches (low)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 1 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Shallow

Present native vegetation: Arizona fescue, Gambel's oak, mountain muhly, blue grama, bottlebrush squirreltail, prairie junegrass, broom snakeweed, muttongrass, buckwheat, whorled plantain

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

Typical Profile:

A-0 to 4 inches; gravelly loam

Bt1—4 to 13 inches; clay Btss—13 to 31 inches; clay

2Bt2—31 to 38 inches; gravelly clay 2R—38 inches; basalt bedrock

### **Minor Components**

Rock outcrop

Composition: About 9 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Canoneros and similar soils

Composition: About 6 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow

Tsoodzil and similar soils

Composition: About 5 percent

Slope: 2 to 6 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Cinder Hills

## 435—Tsoodzil-Amcec association, 5 to 50 percent slopes

#### **Map Unit Setting**

MLRA: 39

Elevation: 7,600 to 9,200 feet (2,316 to 2,804 meters) Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

#### **Map Unit Composition**

Tsoodzil and similar soils: 50 percent Amcec and similar soils: 40 percent Minor components: 10 percent

## **Component Descriptions**

#### **Tsoodzil soils**

Geomorphic position: Cinder cones

Parent material: Eolian material and slope alluvium

derived from basalt *Slope:* 5 to 35 percent

Surface fragments: About 46 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 5.8 inches (low)
Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Very high

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Cinder Hills

Present native vegetation: Gambel's oak, Arizona fescue, mountain muhly, blue grama, bottlebrush squirreltail, muttongrass, prairie junegrass,

buckwheat

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 4C

### Typical Profile:

A-0 to 3 inches; very gravelly loam

Bt1—3 to 11 inches; clay Bt2—11 to 25 inches; clay

Btk1—25 to 32 inches; gravelly clay

2Btk2—32 to 65 inches; extremely gravelly clay loam

#### Amcec soils

Geomorphic position: Cinder cones

Parent material: Eolian material and slope alluvium

over residuum derived from cinders

Slope: 15 to 50 percent

Surface fragments: About 88 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 1.9 inches (very low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Cinder Hills

Present native vegetation: Arizona fescue, mountain muhly, Gambel's oak, blue grama, bottlebrush squirreltail, muttongrass, prairie junegrass,

buckwheat

Land capability (nonirrigated): 7e

Conservation Tree/Shrub Group: 10

Typical Profile:

A—0 to 4 inches; extremely gravelly loam Bt—4 to 16 inches; very gravelly loam

Btk1—16 to 39 inches; extremely gravelly coarse sandy loam

Btk2—39 to 53 inches; extremely gravelly loamy coarse sand

Bk—53 to 70 inches; extremely gravelly loamy coarse sand

## **Minor Components**

Rock outcrop

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Canoneros and similar soils

Composition: About 3 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 10 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow

Montillo and similar soils

Composition: About 3 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Oak Savannah

## 440—Chivato clay, 0 to 1 percent slopes

#### **Map Unit Setting**

MLRA: 39

Elevation: 8,100 to 8,600 feet (2,469 to 2,621 meters)
Mean annual precipitation: 16 to 20 inches (406 to 508

millimeters)

Average annual air temperature: 40 to 45 degrees F (4

to 7 degrees C)

Frost-free period: 90 to 110 days

#### **Map Unit Composition**

Chivato and similar soils: 90 percent Minor components: 10 percent

## **Component Descriptions**

#### Chivato soils

Geomorphic position: Playas on lava plateaus

Parent material: Lacustrine deposits derived from basalt

Slope: 0 to 1 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Moderately well drained

Slowest permeability: About 0.01 in/hr (very slow)

Available water capacity: About 8.3 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Ponding hazard: Occasional

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Negligible

Calcium carbonate maximum: None

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Playa

Present native vegetation: western wheatgrass, curly

dock, pingue hymenoxys Land capability (nonirrigated): 3s Conservation Tree/Shrub Group: 4CC

## Typical Profile:

A—0 to 2 inches; clay Bss1—2 to 13 inches; clay Bss2—13 to 40 inches; clay Bss3—40 to 52 inches; clay Bssg—52 to 65 inches; clay

### **Minor Components**

Seco and similar soils

Composition: About 10 percent

Slope: 1 to 3 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Moderately well drained Ecological site: Mountain Grassland

## 525—Silcat clay loam, 1 to 10 percent slopes

### Map Unit Setting

MLRA: 36

Elevation: 6,800 to 7,500 feet (2,073 to 2,286 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

, . .

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Silcat and similar soils: 85 percent Minor components: 15 percent



Figure 13.—Typical landscape of Silcat clay loam, 1 to 10 percent slopes. With adequate rainfall, these heavy-textured soils will produce an abundance of western wheatgrass.

#### **Component Descriptions**

#### Silcat soils

Geomorphic position: Stream terraces and depressions on valley floors and alluvial fans on valley sides (fig. 13)

Parent material: Stream alluvium derived from shale

Slope: 1 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.01 in/hr (very slow)

Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Very high

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass,

needleandthread, winterfat, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, pingue hymenoxys, rabbitbrush

Land capability (irrigated): 4e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4CC

## Typical Profile:

A—0 to 2 inches; clay loam 2BCss—2 to 38 inches; clay Bk—38 to 65 inches; clay

#### **Minor Components**

Galzuni and similar soils

Composition: About 8 percent

Slope: 1 to 10 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Clayey

Bryway and similar soils

Composition: About 7 percent

Slope: 1 to 10 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

## 550—Bryway-Galzuni loams, 1 to 8 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,800 to 7,600 feet (2,073 to 2,316 meters)

Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Bryway and similar soils: 50 percent Galzuni and similar soils: 35 percent Minor components: 15 percent

## **Component Descriptions**

#### **Bryway soils**

Geomorphic position: Sideslopes on hills, dipslopes on cuestas, and summits on mesas

cuestas, and summits on mesas

Parent material: Slope alluvium over residuum derived

from shale and sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock

(paralithic)

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 4.8 inches (low)
Shrink-swell potential: About 7.5 LEP (high)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 0 mmhos/cm (nonsaline)
Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, Indian ricegrass, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, mountainmahogany, muttongrass, oneseed juniper, pingue hymenoxys, prairie junegrass, twoneedle pinyon, western wheatgrass

Land capability (irrigated): 4e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

Typical Profile:

E—0 to 2 inches; loam
Bt—2 to 6 inches; clay loam
Btk—6 to 32 inches; clay
2Cr—32 inches; shale

#### Galzuni soils

Geomorphic position: Sideslopes on hills, dipslopes on

cuestas, and summits on mesas

Parent material: Eolian material and slope alluvium

derived from shale and sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)

Available water capacity: About 9.6 inches (high)

Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Clayey

Present native vegetation: western wheatgrass, needleandthread, winterfat, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, pingue hymenoxys, rabbitbrush, spineless horsebrush

Land capability (irrigated): 4e Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

#### Typical Profile:

A—0 to 2 inches; loam Bt1—2 to 4 inches; clay

Bt2-4 to 23 inches; clay

Btk—23 to 32 inches; clay loam Bk1—32 to 52 inches; sandy clay Bk2—52 to 65 inches; sandy clay loam

#### **Minor Components**

Highdye and similar soils

Composition: About 6 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Evpark and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Parkelei and similar soils

Composition: About 4 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

## 555—Parkelei-Evpark fine sandy loams, 2 to 8 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,800 to 8,000 feet (2,073 to 2,438 meters) Mean annual precipitation: 13 to 16 inches (330 to 406 millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

#### **Map Unit Composition**

Parkelei and similar soils: 45 percent Evpark and similar soils: 35 percent Minor components: 20 percent

## **Component Descriptions**

#### Parkelei soils

Geomorphic position: Sideslopes on ridges, dipslopes

on cuestas, and summits on mesas

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 8.1 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 5 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, muttongrass, oneseed juniper, prairie junegrass, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

## Typical Profile:

A—0 to 3 inches; fine sandy loam Bt1—3 to 12 inches; clay loam

Bt2—12 to 21 inches; sandy clay loam Bk—21 to 65 inches; sandy loam

## **Evpark soils**

Geomorphic position: Sideslopes and summits on ridges, dipslopes on cuestas, and summits on mesas

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

Available water capacity: About 6.1 inches (moderate) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: High

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Gambel's oak, antelope bitterbrush, banana yucca, big sagebrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, muttongrass, oneseed juniper, prairie junegrass, twoneedle pinyon, western wheatgrass

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 6D

## Typical Profile:

A—0 to 3 inches; fine sandy loam Bt1—3 to 16 inches; clay loam

Bt2—16 to 20 inches; clay loam Bt3—20 to 29 inches; sandy clay loam Btk—29 to 35 inches; sandy clay loam 2R—35 inches; sandstone bedrock

### **Minor Components**

Arabrab and similar soils

Composition: About 10 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Highdye and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

Bryway and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Pinyon-Juniper Forest

## 560—Flugle-Teczuni complex, 1 to 5 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,800 to 7,200 feet (2,073 to 2,195 meters)

Mean annual precipitation: 13 to 14 inches (330 to 356 millimeters)

Average annual air temperature: 49 to 53 degrees F (9 to 12 degrees C)

Frost-free period: 115 to 135 days

### **Map Unit Composition**

Flugle and similar soils: 45 percent Teczuni and similar soils: 35 percent Minor components: 20 percent

#### **Component Descriptions**

## Flugle soils

Geomorphic position: Sideslopes on hills, fan remnants on valley sides, and dipslopes on cuestas

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 8.6 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, bottlebrush squirreltail, western wheatgrass, Indian ricegrass, needleandthread, winterfat, fringed sagewort, broom snakeweed, oneseed juniper, rabbitbrush, spineless horsebrush, twoneedle pinyon

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

Typical Profile:

A—0 to 3 inches; fine sandy loam Bt—3 to 35 inches; sandy clay loam Bk—35 to 65 inches; fine sandy loam

#### Teczuni soils

Geomorphic position: Sideslopes on hills, fan remnants on valley sides, and dipslopes on cuestas

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.06 in/hr (slow)
Available water capacity: About 10.5 inches (high)
Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6 feet

Runoff class: Medium

Calcium carbonate maximum: About 30 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 2 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: blue grama, bottlebrush squirreltail, western wheatgrass, Indian ricegrass, needleandthread, winterfat, fringed sagewort,

broom snakeweed, rabbitbrush, spineless horsebrush, twoneedle pinyon Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

#### Typical Profile:

A—0 to 2 inches; loam
Bt—2 to 16 inches; clay loam
Btk—16 to 33 inches; clay loam
Bk—33 to 65 inches; clay

#### **Minor Components**

Fragua and similar soils

Composition: About 10 percent

Slope: 1 to 5 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained

Ecological site: Sandy Slopes

Atarque and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Shallow Sandstone

Celavar and similar soils

Composition: About 5 percent

Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Savannah

## 561—Flugle-Plumasano association, 2 to 8 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,200 to 7,200 feet (1,890 to 2,195 meters) Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

## **Map Unit Composition**

Flugle and similar soils: 50 percent Plumasano and similar soils: 40 percent

Minor components: 10 percent

## **Component Descriptions**

## Flugle soils

Geomorphic position: Dipslopes on cuestas, sideslopes on ridges, and fan remnants on valley sides

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.60 in/hr (moderate)
Available water capacity: About 8.4 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 10 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Pinyon-Juniper Forest

Present native vegetation: Indian ricegrass, antelope bitterbrush, blue grama, bottlebrush squirreltail, broom snakeweed, buckwheat, cliffrose, galleta, muttongrass, oneseed juniper, sand dropseed, spineless horsebrush, threeawn, twoneedle pinyon, yucca

Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4

#### Typical Profile:

A—0 to 3 inches; fine sandy loam Bt—3 to 17 inches; sandy clay loam Bk—17 to 65 inches; fine sandy loam

#### Plumasano soils

Geomorphic position: Dipslopes on cuestas, sideslopes on ridges

Parent material: Eolian material and slope alluvium

derived from sandstone

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 0.60 in/hr (moderate) Available water capacity: About 7.8 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Low

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: About 0 SAR (nonsodic) Ecological site: Pinyon-Juniper Forest

Present native vegetation: Bigelow's sagebrush, Indian ricegrass, antelope bitterbrush, blue grama, cliffrose, galleta, muttongrass, oneseed juniper, rabbitbrush, ring muhly, sand dropseed, sideoats

grama, twoneedle pinyon, yucca Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 5

### Typical Profile:

A—0 to 2 inches; sandy loam Bw—2 to 11 inches; sandy loam Bk1—11 to 27 inches; sandy loam Bk2—27 to 43 inches; fine sandy loam Bk3—43 to 53 inches; fine sandy loam Bk4—53 to 65 inches; sandy clay loam

## **Minor Components**

Royosa and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained Ecological site: Sandy Slopes

Rizno and similar soils

Composition: About 3 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone

Tekapo and similar soils

Composition: About 2 percent

Slope: 2 to 8 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (paralithic)

Drainage class: Well drained

Ecological site: Shale Hills

## 565—Plumasano-Rock outcrop complex, 15 to 40 percent slopes

#### **Map Unit Setting**

MLRA: 36

Elevation: 6,500 to 7,200 feet (1,981 to 2,195 meters)

Mean annual precipitation: 13 to 14 inches (330 to 356 millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

### **Map Unit Composition**

Plumasano and similar soils: 65 percent

Rock outcrop: 20 percent Minor components: 15 percent

#### **Component Descriptions**

#### Plumasano soils

Geomorphic position: Sideslopes on ridges and escarpments on plateaus and cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone *Slope:* 15 to 40 percent

Depth to restrictive feature: None within 60 inches Drainage class: Somewhat excessively drained Slowest permeability: About 2.00 in/hr (moderately

rapid)

Available water capacity: About 6.5 inches (moderate)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: None Ecological site: Sandy Slopes

Present native vegetation: blue grama, galleta, sand dropseed, Indian ricegrass, antelope bitterbrush,

cliffrose, muttongrass, oneseed juniper,

rabbitbrush, ring muhly, sideoats grama, twoneedle

pinyon, yucca

Land capability (nonirrigated): 7e Conservation Tree/Shrub Group: 5

## Typical Profile:

A—0 to 3 inches; sandy loam
Bk1—3 to 24 inches; sandy loam
Bk2—24 to 36 inches; loamy sand
Bk3—36 to 65 inches; fine sandy loam

#### **Rock outcrop**

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

## **Minor Components**

Rizno and similar soils

Composition: About 5 percent

Slope: 5 to 10 percent

Depth to restrictive feature: 5 to 20 inches to

bedrock (lithic)

Drainage class: Somewhat excessively drained

Ecological site: Shallow Sandstone

Teczuni and similar soils

Composition: About 5 percent Slope: 5 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

Flugle and similar soils

Composition: About 5 percent

Slope: 5 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained Ecological site: Loamy

## 566—Bamac extremely gravelly sandy loam, 5 to 50 percent slopes

## **Map Unit Setting**

MLRA: 36

Elevation: 6,200 to 6,500 feet (1,890 to 1,981 meters) Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 49 to 53 degrees F (9

to 12 degrees C)

Frost-free period: 115 to 135 days

### **Map Unit Composition**

Bamac and similar soils: 90 percent Minor components: 10 percent

## **Component Descriptions**

#### Bamac soils

Geomorphic position: Hills and ridges

Parent material: Slope alluvium derived from

sandstone and conglomerate

Slope: 5 to 50 percent

Surface fragments: About 70 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained

Slowest permeability: About 5.95 in/hr (very rapid) Available water capacity: About 1.6 inches (very

low)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 15 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 0 SAR (nonsodic)

Ecological site: Gravelly

Present native vegetation: sideoats grama, black grama, galleta, Indian ricegrass, New Mexico feathergrass, antelope bitterbrush, blue grama, muttongrass, Bigelow's sagebrush, Mormon tea,

oneseed juniper, twoneedle pinyon Land capability (nonirrigated): 8 Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 2 inches; extremely gravelly sandy loam

Ck1—2 to 8 inches; gravelly sandy loam

Ck2—8 to 30 inches; extremely gravelly coarse

sand

Ck3—30 to 63 inches; very cobbly coarse sand

### **Minor Components**

Plumasano and similar soils

Composition: About 5 percent

Slope: 5 to 40 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Sandy Slopes

Royosa and similar soils

Composition: About 5 percent

Slope: 5 to 10 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Excessively drained Ecological site: Sandy Plains

## 575—Ramah-Pescado association, 1 to 8 percent slopes

### **Map Unit Setting**

MLRA: 36

Elevation: 6,400 to 7,000 feet (1,951 to 2,134 meters) Mean annual precipitation: 13 to 14 inches (330 to 356

millimeters)

Average annual air temperature: 46 to 49 degrees F (8

to 9 degrees C)

Frost-free period: 100 to 135 days

## **Map Unit Composition**

Ramah and similar soils: 45 percent Pescado and similar soils: 35 percent

Minor components: 20 percent

## **Component Descriptions**

#### Ramah soils

Geomorphic position: Lava flows on valley floors Parent material: Eolian and alluvial material derived from sandstone

Slope: 1 to 4 percent

Depth to restrictive feature: None within 60 inches

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately

slow)

Available water capacity: About 10.4 inches (high)

Shrink-swell potential: About 1.5 LEP (low)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 30 percent

Gypsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline) Sodicity maximum: About 1 SAR (slightly sodic)

Ecological site: Loamy

Present native vegetation: western wheatgrass, Indian ricegrass, big sagebrush, blue grama, bottlebrush squirreltail, galleta, oneseed juniper, winterfat, broom snakeweed, muttongrass, rabbitbrush, spineless horsebrush, twoneedle pinyon

Land capability (irrigated): 3c Land capability (nonirrigated): 6c Conservation Tree/Shrub Group: 4C

#### Typical Profile:

A—0 to 3 inches; sandy loam Bt1—3 to 8 inches; sandy clay loam

Bt2—8 to 15 inches; clay loam Btk—15 to 33 inches; clay loam Bk1—33 to 41 inches; clay loam

Bk2-41 to 62 inches; sandy clay loam

#### Pescado soils

Geomorphic position: Lava flows on valley floors Parent material: Eolian material derived from sandstone

Slope: 1 to 8 percent

Depth to restrictive feature: 5 to 20 inches to bedrock

(lithic)

Drainage class: Well drained

Slowest permeability: About 0.20 in/hr (moderately slow)

Available water capacity: About 2.7 inches (very low) Shrink-swell potential: About 4.5 LEP (moderate)

Flooding hazard: None

Seasonal water table minimum depth: Greater than 6

feet

Runoff class: Medium

Calcium carbonate maximum: About 5 percent

Gvpsum maximum: None

Salinity maximum: About 2 mmhos/cm (nonsaline)

Sodicity maximum: None Ecological site: Malpais

Present native vegetation: big sagebrush, blue grama, galleta, western wheatgrass, Indian ricegrass,

bottlebrush squirreltail, little bluestem,

muttongrass, needleandthread, sideoats grama, winterfat, oneseed juniper, twoneedle pinyon

Land capability (nonirrigated): 7s Conservation Tree/Shrub Group: 10

## Typical Profile:

A—0 to 3 inches; fine sandy loam Bt1—3 to 10 inches; sandy clay loam Bt2—10 to 16 inches; clay loam 2R—16 inches; basalt bedrock

### **Minor Components**

Rock outcrop

Composition: About 9 percent

Rock outcrop consists of barren or nearly barren areas of exposed sandstone and shale on ridges, ledges, and escarpments.

Evpark and similar soils

Composition: About 6 percent

Slope: 2 to 6 percent

Depth to restrictive feature: 20 to 40 inches to

bedrock (lithic)

Drainage class: Well drained Ecological site: Loamy

Parkelei and similar soils

Composition: About 5 percent

Slope: 2 to 8 percent

Depth to restrictive feature: None within 60

inches

Drainage class: Well drained Ecological site: Loamy

## Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## **Interpretive Ratings**

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

## **Rating Class Terms**

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are not limited, slightly limited, somewhat limited, and very limited. The suitability ratings are expressed as well suited, moderately well suited, poorly suited, and unsuited or as good, fair, and poor.

## **Numerical Ratings**

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

## Prime Farmland and Farmland of Statewide and Local Importance

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is

available for these uses. It could be cultivated land. pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service. There is no farmland in the survey that meets the criteria for prime farmland. In addition, no farmlands meet the criteria for statewide importance. Statewide important farmlands are those having an irrigated land capability class of IV or better and are irrigated with a supply of irrigation water that will meet crop needs throughout the growing season.

In some local areas there is a need for certain additional farmlands for the production of food, feed, fiber, and forage, even though these lands are not identified as having national or statewide importance. Where appropriate, these lands are to be identified by the local agency or agencies concerned. In places, additional farmlands of local importance may include tracts of land that have been designated for agriculture by local ordinance.

The map units in the survey area that are considered farmlands of local importance are listed in table 5. Areas in the survey where these soils exist are mostly on the Zuni Indian Reservation, the upper reaches of the Rio Nutria, along the Rio Pescado, the Ramah Valley, and small areas west of Vanderwagon, NM. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

## **Crops and Pasture**

By Edward J. Oliver Jr., district conservationist, Natural Resources Conservation Service.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Approximately 2,100 acres in the survey area is irrigated cropland. The supply of irrigation water is limited in most areas. The irrigation reservoirs in the survey area are limited by capacity and/or runoff capacity. Dryland farming acreage is limited to small plots of corn planted mostly for ceremonial purposes. Given a mean annual precipitation range of 10 to 16 inches, moisture is not dependable enough to allow producers to expect reliable yields in any given year. The number of frost-free days in the survey area ranges from 100 to 150 days, depending on the elevation.

In the Ramah Valley area, the main use of irrigated water is to produce pasture grasses for grazing domestic livestock. A small acreage in the area is used for growing small grains, such as wheat and oats. Irrigation water in the valley comes from the Ramah reservoir a few miles to the north.

There are five irrigated areas on the Zuni Reservation. Water for the irrigation areas is provided by reservoirs, which store water from several rivers. The main crops grown are alfalfa, corn, rye, and oats. Also grown is an assortment of garden vegetables, including pumpkins, squash, beans, cucumbers, and chili peppers.

The main objectives in cropland management are proper irrigation, maintenance of good soil tilth and fertility, and control of water erosion and soil blowing. Measures that reduce salinity or sodicity and improve drainage also are needed in some areas. Salinity and sodicity can be reduced by leaching or by applying soil amendments.

Using a suitable cropping system helps to maintain

good soil tilth, structure, aeration, and fertility. A single crop can be grown for many years on some soils with little adverse effect on yields. Other soils deteriorate rapidly if low-residue crops are grown unless large amounts of organic matter are added annually. Rotating crops helps to control insects, disease, and weeds.

Applying adequate amounts of irrigation water in a timely manner and avoiding over-irrigation are essential for high yields. The irrigation system should be adapted to the soil and the crops grown. Over-irrigation leaches nutrients from the root zone, results in excessive wetness of the lower part of the soil, and reduces aeration in the root zone.

Good management practices such as planting adapted varieties, timely planting and harvesting, and applying fertilizer according to needs of the crops can increase yields of annual crops, hay crops and pasture plants. Control of weeds, insects and disease also helps to increase yields.

Good pasture management includes such practices as applying adequate fertilizer, clipping after grazing to remove excess forage and weeds and rotation grazing.

## Yields per Acre

The average irrigated yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is

uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The *productivity index* is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values and taxes, and to perform risk analysis when land management decisions are made.

## Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

Land capability classifications for the individual soils in this survey can be found in the "Detailed Soil Map Units" section.

In the capability system, soils are generally grouped at two levels—capability class and subclass.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their

Class 2 soils have moderate limitations that restrict

the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, 2e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

## Rangeland

About 80 percent of the survey area is range or grazable woodland. A large portion of the farm income is derived from the production of cattle and some sheep. Cow-calf-yearling operations are the most common. On many ranches the forage produced on rangeland is supplemented with hay and protein supplements. There are ranches of up to 250,000 acres and smaller ranches that average about 3,000

acres or less. Most tribal ranches, Navajo and Zuni, average about 4,000 acres in size.

Prior to the introduction of domestic livestock by the Spanish explorers, the main grazers and browsers of the land were small numbers of buffalo, mule deer, and elk, and larger numbers of desert bighorn sheep, antelope, and prairie dogs.

About 48 percent of the grazing land is administered by the Bureau of Indian Affairs, and about 41 percent is under private management. About 9 percent is managed by the Bureau of Land Management, about 1 percent is managed by the U.S. Forest Service, and approximately another 1 percent is overseen by the National Park Service and the State of New Mexico.

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory vegetation are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 6 shows, for each soil that supports vegetation suitable for grazing, the ecological site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in table 6 follows.

An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed

in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under rangeland composition, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in chapter 4 of the National Range and Pasture Handbook, which is available in local offices of the Natural Resources Conservation Service.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

## **Forest Productivity and Management**

The two major types of forestland in the survey area are ponderosa pines mixed with Douglas fir and Englemann spruce at the higher elevations, and pinyon-juniper forests. Logging in the Zuni Mountains began in the 1890's. Areas were logged extensively from the 1900's to the 1940's. In the Zuni Mountains, a

narrow-gauge railroad was used to transport logs to the sawmills. From the late 1930's through World War II, areas that had appreciable amounts of ponderosa pine were cut over for the production of railroad ties.

The many periods of heavy cutting and the subsequent farming, overgrazing, and control of fires have resulted in the present forest conditions. Some wooded areas are understocked. The residual trees in these areas are of poor quality for timber. Many second-growth stands are overstocked and require thinning before optimum growth and yields can be achieved.

The dominant timber species in the survey area is ponderosa pine. Ponderosa pine grows best at elevations above 8,000 feet, but it also grows at elevations as low as 7,300 feet. Douglas fir grows best on the north-facing slopes between elevations of 7,800 and 8,300 feet. Small areas of Douglas fir are on the cooler, north-facing slopes in the Zuni Mountains. The main species at elevations above 8,800 feet are Engelman spruce and corkbar fir. Narrow bands of blue spruce are along some of the drainageways at the higher elevations.

The Corzuni, Fortwingate, and Zunalei soils have the highest potential for timber production. Timber can also be produced on the Asaayi and Osoridge soils.

Twoneedle pinyon and oneseed juniper are common at elevations of 7,100 to 7,800 feet, but they also grow on the south-facing slopes at elevations as high as 8,100 feet. Rocky Mountain juniper and alligator juniper are included in the overstory at the higher elevations. Although twoneedle pinyon and oneseed juniper are not considered commercial species, they are used extensively for fuel wood, fenceposts, Christmas trees and ornamental plantings. Pinyon also provides edible nuts.

Most of the understory in the areas of pinyon and juniper is used for livestock grazing. Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some forestland can produce enough understory vegetation to support grazing by livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive; therefore, the production of understory plants can be increased by thinning the trees in the overstory. In the section "Detailed Soil Map Units," the common understory plants are specified for the soils in the survey area that are used as forestland.

The Flugle, Parkelei, and Fragua soils support the

best stands of pinyon and juniper. The Fraguni and Celavar soils also support pinyon and juniper.

Good forestland management includes protection against fire, insects and disease; thinning and pruning to improve growth and quality; reforestation; cutting to improve the stocking level; and proper watershed management.

The United States Forest Service, New Mexico Division of Forestry, and private individuals oversee fire prevention and control. Proper silviculture practices provide protection against insects (bark beetles) and diseases (dwarf mistletoe and red rot). Thinning and pruning of selected trees can improve the quality of the timber and the growth potential of the site.

Reforestation can be achieved by natural regeneration and by planting. Proper site preparation may be needed to provide a good seedbed and minimize competition from shrubs and grasses.

Watershed management includes the proper location of skid trails, logging roads and landing, and the proper treatment of all areas disturbed by logging activities. Constructing water bars, cross ditching, building outsloping roads, and then seeding grasses, forbs and browse species are practices that help control water erosion. Leaving a buffer strip of undisturbed soil and vegetation on both sides of watercourses also helps to control erosion and minimizes the amount of sediment reaching streams.

The tables in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forest management.

## **Forest Productivity**

In table 7, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the National Forestry Manual, which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree

species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

## **Forest Management**

In table 8a and table 8b, interpretive ratings are given for various aspects of forest management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately well suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsuited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the National Forestry Manual, which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Ratings in the column hazard of off-road or off-trail erosion are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-

road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column hazard of erosion on roads and trails are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of slight indicates that little or no erosion is likely; moderate indicates that some erosion is likely, that the roads or trails may require occasional maintenance; and that simple erosion-control measures are needed; and severe indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately well suited, or poorly suited to this use.

Ratings in the columns suitability for hand planting and suitability for mechanical planting are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of* harvesting equipment are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, or poorly suited to this use.

## Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibilty of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

The trees or shrubs selected for planting in windbreaks should be those that are suited to the soils on the site. Selecting suitable species helps to ensure the survival, rapid growth, and longevity of windbreaks. The soil characteristics that greatly affect the growth rate of trees and shrubs are permeability, available water capacity, and depth to bedrock.

Grazing can be detrimental to windbreaks and environmental plantings because livestock compact the soil and remove the lower branches of the trees and shrubs. Compaction retards growth and removal of the lower branches reduces the effectiveness and esthetic value of the windbreaks. Weeds and insects prevent trees from achieving their maximum growth rates. Weeds can be controlled by clean cultivation and herbicide applications. An insufficient moisture supply hinders the survival of trees in urban areas and on cropland. Drip irrigation or other methods of irrigation are needed to reduce the seedling mortality rate and ensure continued growth. Fallowing a year before planting helps to provide a sufficient soil moisture supply for the establishment of seedlings.

In the section "Detailed Soil Map Units," the Conservation Tree/Shrub Group is provided. This grouping can be used to reference tables and charts that show the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens.

Additional information on planning windbreaks and

screens along with guidance on their proper care can be obtained from the local offices of the Natural Resources Conservation Service, the Cooperative Extension Service, or from a commercial nursery.

#### Recreation

The soils of the survey area are rated in table 9a and table 9b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in tables 9a and 9b can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil

properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

## Wildlife Habitat

David Seery, Wildlife Biologist, Natural Resources Conservation Service, helped prepare this section.

There are six general areas containing wildlife habitat in the McKinley County Area:

- 1.) Plateaus, mesas, and terraces
- 2.) Mountains
- 3.) River and stream valleys
- 4.) Wetlands
- 5.) Breaks
- 6.) Rock outcrops

Plateaus, mesas, and terraces contain soils that have grasslands and pinyon-juniper forests on the gently undulating to steep slopes. Grasses and shrubs grow on soils that range from very shallow to very deep.

The summits of plateaus and mesas support pinyon-juniper forests. Elevations range from 6,800 to 7,800 feet. Various wildlife species also use these areas, for example, gray squirrels, cottontail rabbits, prairie rattlesnakes, and pinyon jays.

Fan remnants and stream terraces form old land surfaces near valleys and mountains. These upland sites are home to badger, striped skunk, prairie dogs, prairie rattlesnakes, black-tailed jackrabbit, and hawks. Antelope could be reintroduced in the northern half of the survey if given protection until established. Badgers and other burrowing animals make extensive use of areas of coarse and moderately coarse textured soils

Mountains occur in the southern portion of the survey area east of Gallup and north of Grants.

The Zuni Mountains and the Mt. Taylor area contain some of the most important wildlife habitat in the survey area. Woodlands of ponderosa pine, Douglasfir, pinyon, juniper, and Gambel oak provide habitat for turkey, mule deer, elk, black bear, porcupine, cottontail rabbits, gray squirrel, band-tailed pigeons, owls, hawks, prairie rattlesnakes, and songbirds.

Open grassy valleys are home to prairie dogs and possibly the endangered black-footed ferret. The long-tailed weasel also occurs in these areas. Local wetlands are important for many birds, waterfowl, and local mammals. Steep slopes and variable topography also play important roles in wildlife habitat.

River and stream valleys occur along such streams as the Puerco, Chaco, Cottonwood, Pescado, Rio Nutria, Zuni, and San Jose River. They contain riparian vegetation and water for wildlife use. These areas are used by all local wildlife for some part of their needs.

Songbirds nest in cottonwood and willow trees in large numbers. Cavity-nesting birds find many nest sites in holes within large cottonwood trees. Quail use the thick vegetation for cover and seed sources. The abundant prey species attract many predators such as coyote, hawks, prairie rattlesnakes, and bobcat. Mule deer may spend their whole lives in these river bottoms.

The potential for competition between livestock and wildlife is high. The plant communities in these riparian areas must be maintained in good condition to provide wildlife habitat, flood protection, water quality, and soil erosion control.

Wetlands are areas containing hydrophytic vegetation, hydric soils, and wetland hydrology. Marshes are wetlands dominated by grasses and grass-like plants, and they occur in few areas of the

survey area. Some are in channels of the Rio Nutria, Pescado, and Cottonwood River valleys and are produced by ground water. Other small marshes are human-induced and formed by irrigation impoundments.

All of these wetlands are used extensively by a large variety of wildlife species. Predators and prey species alike gather at these oases in an otherwise dry landscape.

Wetlands provide natural protection from flooding, enhance water quality, furnish habitat for wildlife, and conserve water. Wetlands need protection from excessive grazing, drainage projects, and poorly planned urban development.

Breaks are the steep, broken lands on the escarpments of mesas and plateaus. Breaks are very eroded and dissected, with many small ridges and gullies. Vegetation on the soils occurs in breaks, but not in large amounts. Although annual production of airdry vegetation is generally low, plant diversity is high. This botanic diversity, along with the physical cover provided by the terrain, provides an attractive habitat for wildlife. Mule deer hide in breaks and feed on browse plants such as true mountainmahogany. Coyote and red fox find cover in the intricate, rocky landscapes. Trees growing on breaks at higher elevations provide nest sites and hunting perches for raptors, such as the red-tailed hawk.

Rock outcrops furnish wildlife habitat when they occur as cliffs below rims of plateaus, mesas, and canyons. Although little or no vegetation grows on rock outcrops, they are still important to many species. Eagles, hawks, turkey vultures, owls, diamondback rattlers, and swallows utilize cliffs and ledges. Migratory bats seasonally roost in cracks and caves. Foxes, bobcats, bears, and cougars have dens in alcoves and caves.

## **Engineering**

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

# **Building Site Development**

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 10a and table 10b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential),

and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrinkswell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can

be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

# **Sanitary Facilities**

Table 11a and table 11b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Slightly limited indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Groundwater contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick

enough over bedrock or a cemented pan to make land smoothing practical.

A trench sanitary landfill is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an area sanitary landfill, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If

permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

## **Construction Materials**

Table 12a and table 12b give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated *good, fair,* or *poor* as potential sources of topsoil, reclamation material, and roadfill. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

The soils are rated as a *probable* or *improbable* source of sand and gravel. A rating of *probable* means that the source material is likely to be in or below the soil. The numerical ratings in these columns indicate

the degree of probability. The number 0.00 indicates that the soil is an improbable source. A number between 0.00 and 1.00 indicates the degree to which the soil is a probable source of sand or gravel.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12a, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the

productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

## Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, a cemented pan, or other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is

subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

# **Soil Properties**

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

# **Engineering Index Properties**

Table 14 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

*Depth* to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1998) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1998). The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 14.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area

and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

## **Physical Properties**

Table 15 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter.

*Silt* as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 15, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $^{1}/_{3}$ - or  $^{1}/_{10}$ -bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability ( $K_{sat}$ ) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity ( $K_{sat}$ ). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at <sup>1</sup>/<sub>3</sub>- or <sup>1</sup>/<sub>10</sub>-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrinkswell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 15 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor Kw* indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

*Erosion factor Kf* indicates the erodibility of the fineearth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

- 1. Coarse sands, sands, fine sands, and very fine sands.
- 2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
- 3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
- 4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
- 5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
- 6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
- 7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
- 8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

# **Chemical Properties**

Table 16 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil

amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

## **Soil Features**

Table 17 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A restrictive layer is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. Depth to

*top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

## **Water Features**

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are

thoroughly wet, and receive precipitation from longduration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 18 indicates, by month, depth to the top (upper limit) and base (lower limit) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at various times of the year at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 18 indicates surface water depth and the duration and frequency of ponding. Duration is expressed as very brief if less than 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than

30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and frequency are estimated. Duration is expressed as extremely brief if 0.1 hour to 4 hours, very brief if 4 hours to 2 days, brief if 2 to 7 days, long if 7 to 30 days, and very long if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. None means that flooding is not probable; very rare that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); rare that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); occasional that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); frequent that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and very frequent that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

# Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Ustalfs (*Ust*, meaning burnt or dry, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplustalfs (*Hapl*, meaning minimal horizonation, plus *ustalf*, the suborder of the Alfisols that has a ustic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Aridic* identifies the subgroup that typifies the great group. An example is Aridic Haplustalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is the Flugle series, which is a fine-loamy, mixed, superactive, mesic Aridic Haplustalf.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

# Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1999) and in "Keys to Soil Taxonomy" (USDA, 1998). Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

## **Alesna Series**

Taxonomic class: Fine, mixed, superactive, mesic

Ustic Calciargids Depth class: Deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava plateaus and volcanic

cones

Parent material: Slope alluvium and colluvium derived

from basalt, shale, and sandstone

Slope range: 15 to 55 percent Elevation: 6,500 to 7,600 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Alesna extremely cobbly loam, in an area of mapping unit 270, Alesna-Rock outcrop complex, 15 to 55 percent slopes; McKinley County, New Mexico; Cerro Alesna Quadrangle; 3,800 feet west and 200 feet north of the southeast corner of sec. 2, T. 14 N., R. 7 W.; latitude 35 degrees, 27 minutes, 52 seconds and longitude 107 degrees, 33 minutes, 09 seconds.

The surface is covered by 35 percent gravel, 25 percent cobbles, and 5 percent stones.

A—0 to 1 inches; pale brown (10YR 6/3) extremely cobbly loam, brown (10YR 4/3) moist; weak medium platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common fine irregular pores; 35 percent gravel, 25 percent cobbles, and 5 percent stones; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bt—1 to 10 inches; brown (10YR 5/3) gravelly clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, very sticky and plastic; many very fine and fine and few medium roots; many fine irregular pores; common distinct clay films bridging sand grains and on faces of peds; 20 percent gravel and 1 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary.

Btk1—10 to 20 inches; light olive brown (2.5Y 5/3) very gravelly clay, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to strong fine angular blocky; very hard, very firm, sticky and very plastic; many very fine and fine and few medium roots; common fine tubular pores; many prominent clay films on faces of peds; 35 percent gravel, 5 percent cobbles; strongly effervescent; many fine weakly cemented concretions of calcium carbonate and coating rock fragments; 8 percent calcium carbonate equivalent; strongly alkaline (pH 8.6); clear wavy boundary.

Btk2—20 to 26 inches; light olive brown (2.5Y 5/3)

clay, olive brown (2.5Y 4/3) moist; very hard, very firm, sticky and very plastic; common very fine and fine roots; common fine tubular pores; many prominent clay films on faces of peds; 1 percent gravel and 1 percent cobbles; strongly effervescent; many medium and coarse masses of calcium carbonate and coating rock fragments; 12 percent calcium carbonate equivalent; strongly alkaline (pH 8.6); clear wavy boundary.

Btk3—26 to 52 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common fine irregular pores; many distinct clay films bridging sand grains and on faces of peds; 8 percent gravel, 1 percent cobbles, and 1 percent stones; violently effervescent; rock fragments are coated with calcium carbonate; 20 percent calcium carbonate equivalent; strongly alkaline (pH 8.8).

2Cr-52 inches; shale

## **Range in Characteristics**

Particle-size control section: 40 to 55 percent clay with 5 to 34 percent rock fragments

Depth to paralithic contact: 40 to 60 inches to shale, or shale interbedded with sandstone

Depth to calcic horizon: 10 to 35 inches with 15 to 40 percent calcium carbonate equivalent

Sodicity: SAR of 1 to 5

A horizon:

Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist

Rock fragments: 60 to 80 percent total; 35 to 50 percent gravel; 20 to 40 percent cobbles; 0 to 5 percent stones; 0 to 1 percent boulders. All fragments are basalt and sandstone.

Reaction: neutral to moderately alkaline

Bt horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist Texture: clay loam or clay

Rock fragments: 0 to 50 percent total; 0 to 50 percent gravel; 0 to 10 percent cobbles. All fragments are basalt and sandstone.

Note: When this horizon has more than 35 percent rock fragments, it is too thin or is below the particle size control section to affect the particle size class.

Reaction: slightly or moderately alkaline

Btk horizon:

Hue: 7.5YR, 10YR, or 2.5Y

Value: 4 to 7 dry, 3 to 5 moist Chroma: 3 to 6 dry or moist Texture: clay loam or clay

Rock fragments: 1 to 40 percent total; 0 to 40 percent gravel; 0 to 5 percent cobbles; 0 to 1 percent stones. All fragments are basalt and sandstone.

Note: When this horizon has more than 35 percent rock fragments, it is too thin or is too far below the particle size control section to affect the particle size class.

Calcium carbonate equivalent: 5 to 40 percent Reaction: slightly to strongly alkaline

Bk horizon (when present): Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 4 or 5 moist Chroma: 4 or 5 dry, 4 to 6 moist

Rock fragments: 20 to 50 percent total; 20 to 45 percent gravel; 0 to 5 percent cobbles. All fragments are basalt and sandstone.

Calcium carbonate equivalent: 15 to 40 percent

Reaction: moderately or strongly alkaline

## **Amcec Series**

Taxonomic class: Loamy-skeletal, mixed, superactive,

frigid Vitrandic Haplustalfs Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderate

Geomorphic position: Cinder cones

Parent material: Eolian material and slope alluvium

over residuum derived from cinders

Slope range: 10 to 50 percent Elevation: 7,600 to 9,200 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

#### **Typical Pedon**

Amcec extremely gravelly loam, in an area of mapping unit 435, Tsoodzil-Amcec association, 5 to 50 percent slopes; McKinley County, New Mexico; latitude 35 degrees, 20 minutes, 55 seconds and longitude 107 degrees, 20 minutes, 41 seconds.

The surface is covered by 80 percent gravel, 5 percent cobbles, and 3 percent stones.

A—0 to 4 inches; dark reddish brown (5YR 3/4) extremely gravelly loam, dark reddish brown (2.5YR 2.5/4) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine irregular pores; 80 percent gravel, 5 percent

- cobbles, and 3 percent stones, neutral (pH 6.8); clear smooth boundary.
- Bt—4 to 16 inches; dark reddish brown (2.5YR 3/4) very gravelly loam, dark reddish brown (2.5YR 2.5/4) moist, slightly hard, firm, sticky and plastic; many very fine and fine roots; common fine irregular pores; many distinct clay films on faces of peds; 40 percent gravel and 5 percent cobbles, slightly alkaline (pH 7.4); clear wavy boundary.
- Btk1—16 to 39 inches; dark reddish brown (5YR 3/4) extremely gravelly coarse sandy loam, dark reddish brown (2.5YR 2.5/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common distinct clay films bridging sand grains; 85 percent gravel and 5 percent cobbles; violently effervescent; rock fragments are coated with calcium carbonate; 1 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); gradual wavy boundary.
- Btk2—39 to 53 inches; dark reddish brown (2.5YR 3/4) extremely gravelly loamy coarse sand, dark reddish brown (2.5YR 2.5/4) moist; massive; loose, loose, nonsticky and nonplastic; few very fine and fine roots; common distinct clay films bridging sand grains; 80 percent gravel, 5 percent cobbles, 5 percent stones; strongly effervescent; rock fragments are coated with calcium carbonate; 1 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); gradual irregular boundary.
- Bk—53 to 70 inches; dark reddish brown (2.5YR 3/4) extremely gravelly loamy coarse sand, dark reddish brown (2.5YR 2.5/4) moist; massive; loose, loose, nonsticky and nonplastic; few very fine and fine roots; 50 percent gravel, 20 percent cobbles, and 20 percent stones; strongly effervescent; rock fragments are coated with calcium carbonate; slightly alkaline (pH 7.8).

## **Range in Characteristics**

Particle-size control section: 20 to 30 percent clay, more than 35 percent sand, and more than 35 percent gravel and cobble-sized cinders

Depth to secondary calcium carbonate: 15 to 25 inches with 1 to 10 percent calcium carbonate equivalent in the Btk and Bk horizons.

Reaction: slightly acid or neutral in the surface and slightly alkaline in the subsoil

A horizon:

Hue: 2.5YR through 10YR
Value: 3 or 4 dry, 2.5 or 3 moist
Chroma: 2 to 4 dry or moist

Rock fragments: 60 to 90 percent total; 20 to 80

percent gravel; 5 to 30 percent cobbles; 0 to 10 percent stones; 0 to 1 percent boulders. All fragments are cinders and basalt.

Bt horizon:

Hue: 2.5YR or 5YR

Value: 3 or 4 dry, 2.5 or 3 moist Chroma: 3 or 4 dry or moist

Texture: loam, clay loam, or sandy clay loam Rock fragments: 20 to 60 percent total; 15 to 60 percent gravel; 5 to 20 percent cobbles. All fragments are cinders and basalt.

Btk horizon:

Hue: 2.5YR or 5YR

Value: 3 or 4 dry, 2.5 or 3 moist Chroma: 3 or 4 dry or moist

Texture: coarse sandy loam, loamy coarse sand, or

sandy clay loam

Rock fragments: 50 to 90 percent total; 40 to 85 percent gravel; 5 to 10 percent cobbles; 0 to 5 percent stones. All fragments are cinders and basalt.

Bk horizon (when present):

Hue: 2.5YR or 5YR

Value: 3 or 4 dry, 2.5 or 3 moist Chroma: 4 or 6 dry or moist

Texture: loamy coarse sand or sandy loam
Rock fragments: 80 to 95 percent total; 40 to 90
percent gravel; 0 to 20 percent cobbles; 0 to 20
percent stones. All fragments are cinders and basalt.

## **Aquima Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplocambids

Depth class: Very deep Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Valley sides and valley floors Parent material: Fan and stream alluvium derived from

siltstone, sandstone, and shale

Slope range: 1 to 5 percent Elevation: 6,000 to 6,800 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### **Typical Pedon**

Aquima silt loam, in an area of mapping unit 225, Aquima-Hawaikuh silt loams, 1 to 5 percent slopes; McKinley County, New Mexico; Ojo Caliente Reservoir Quadrangle; 2,800 feet east and 200 feet north of the southwest corner of sec. 29, T. 9 N., R. 20 W.; latitude 34 degrees, 58 minutes, 27 seconds and longitude 108 degrees, 58 minutes, 09 seconds (fig. 14).

- A—0 to 2 inches; reddish brown (2.5YR 5/4) silt loam, reddish brown (2.5YR 4/4) moist; weak thin platy parting to weak fine granular structure; soft, friable, slightly sticky and nonplastic; few very fine and fine roots; common very fine irregular pores; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Bk1—2 to 11 inches; reddish brown (2.5YR 5/4) silt loam, reddish brown (2.5YR 4/4) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; common very fine and fine roots; common fine tubular pores; 2 percent gravel; strongly effervescent; few fine irregular masses and weakly cemented concretions of calcium carbonate; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.3); abrupt smooth boundary.
- Bk2—11 to 17 inches; red (2.5YR 4/6) sandy clay loam, red (2.5YR 4/6) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores; 4 percent gravel; strongly effervescent; common fine and medium irregular masses and weakly cemented concretions of calcium carbonate; 8 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.
- 2Bk3—17 to 26 inches; red (2.5YR 5/6) silt loam, red (2.5YR 4/6) moist; massive; soft, friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine irregular pores; slightly effervescent; 4 percent calcium carbonate equivalent; strongly alkaline (pH 8.8); clear smooth boundary.
- 2Bk4—26 to 30 inches; red (2.5YR 4/6) silt loam, dark red (2.5YR 3/6) moist; massive; soft, friable, slightly sticky and nonplastic; common very fine and fine roots; common fine irregular pores; slightly effervescent; few fine irregular masses and weakly cemented concretions of calcium carbonate; 5 percent calcium carbonate equivalent; strongly alkaline (pH 8.7); clear smooth boundary.
- 2Bk5—30 to 33 inches; red (2.5YR 4/6) silt loam, dark red (2.5YR 3/6) moist; massive; soft, friable, slightly sticky and nonplastic; common very fine and fine roots; common fine irregular pores; slightly effervescent; 4 percent calcium carbonate equivalent; strongly alkaline (pH 8.9); clear smooth boundary.
- 3Bk6—33 to 45 inches; red (2.5YR 4/6) silty clay loam, dark red (2.5YR 3/6) moist; massive; soft, friable,

slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 1 percent gravel; slightly effervescent; few fine irregular masses and weakly cemented concretions of calcium carbonate; 5 percent calcium carbonate equivalent; strongly alkaline (pH 8.5); clear smooth boundary.

3Bk7—45 to 49 inches; red (2.5YR 4/6) sandy clay loam, dark red (2.5YR 3/6) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 5 percent gravel; strongly effervescent; common fine irregular masses and weakly cemented concretions of calcium carbonate; 9 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear smooth boundary.

3Bk8—49 to 65 inches; red (2.5YR 4/6) gravelly clay loam, dark red (2.5YR 3/6) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 15 percent gravel; strongly effervescent; common fine irregular masses and weakly cemented concretions of calcium carbonate; 8 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

## Range in Characteristics

Particle-size control section: 20 to 35 percent clay Reaction: Slightly to moderately alkaline in the surface and moderately to strongly alkaline in the subsoil

A horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 4 or 6 dry, 3 or 4 moist

Bw horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 4 or 6 dry or moist

Texture: Silt loam, silty clay loam, and sandy clay

loam

Rock fragments: 0 to 5 percent gravel. All fragments

are sandstone.

Calcium carbonate equivalent: 2 to 10 percent

Bk horizons:

Hue: 10R, 2.5YR or 5YR Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6 dry, 4 through 8 moist

Texture: clay loam, sandy clay loam, or silty clay loam Rock fragments: 0 to 20 percent gravel and 0 to 10 percent cobbles. All fragments are sandstone. Calcium carbonate equivalent: 2 to 10 percent Some pedons have a C horizon with textures of loamy sand and sand, below 50 inches.

#### **Arabrab Series**

Taxonomic class: Loamy, mixed, superactive, mesic

Lithic Haplustalfs

Depth class: Shallow

Praining class Wall d

Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Mesas and cuestas

Parent material: Eolian material and slope alluvium over residuum derived from sandstone

Slope range: 2 to 6 percent Elevation: 6,800 to 8,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Arabrab gravelly fine sandy loam, in an area of mapping unit 332, Evpark-Arabrab complex, 2 to 6 percent slopes; McKinley County, New Mexico; Thoreau Quadrangle; 2,100 feet west and 200 feet north of the southeast corner of sec. 35, T.15 N., R.13 W.; latitude 35 degrees, 28 minutes, 52 seconds N. and longitude 108 degrees, 10 minutes, 54 seconds W.

The surface is covered by about 20 percent gravel, 2 percent cobbles, and 1 percent stones.

A—0 to 2 inches; brown (7.5YR 5/4) gravelly fine sandy loam, dark brown (7.5YR 3/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few very fine tubular pores; about 20 percent gravel, 2 percent cobbles, and 1 percent stones; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—2 to 7 inches; brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few very fine tubular pores; many distinct clay films on faces of peds and bridging sand grains; about 5 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

Bt2—7 to 12 inches; strong brown (7.5YR 5/6) clay loam, strong brown (7.5YR 4/6) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and few medium roots; few very fine tubular pores; many prominent clay films on faces of

peds; about 5 percent gravel; slightly alkaline (pH 7.6); clear smooth boundary.

Btk—12 to 17 inches; brown (7.5YR 5/4) gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate very fine and fine subangular blocky structure; very hard, very firm, sticky and plastic; few very fine, fine, and medium roots; few very fine tubular pores; many prominent clay films on faces of peds; about 40 percent gravel; slightly effervescent; few very fine and fine filaments and masses of calcium carbonate; slightly alkaline (pH 7.8); abrupt smooth boundary.

2R-17 inches; sandstone

## Range in Characteristics

Particle-size control section: 18 to 35 percent clay Depth to lithic contact: 10 to 20 inches to sandstone

A horizon:

Hue: 5YR to 10YR

Value: 4 to 6 dry, 3 or 4 moist

Chroma: 2 to 4 moist

Rock fragments: 0 to 25 percent total; 0 to 25 percent gravel; 0 to 2 percent cobbles; 0 to 1 percent

stones. All fragments are sandstone. *Reaction:* neutral or slightly alkaline

Bt horizons:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 4 or 6 dry, 3 to 6 moist

Texture: fine sandy loam, sandy clay loam, or clay

loam

Rock fragments: 0 to 10 percent sandstone gravel

Reaction: neutral or slightly alkaline

Btk horizon: Hue: 5YR or 7.5YR

Texture: sandy clay loam or clay loam

Rock fragments: 0 to 40 percent sandstone channers

or gravel

Calcium carbonate equivalent: 1 to 5 percent Reaction: slightly to moderately alkaline

## **Asaayi Series**

Taxonomic class: Loamy, mixed, active, frigid Lithic

Haplustalfs Depth class: Shallow

Drainage class: Well drained Permeability: Moderately slow Geomorphic position: Cuestas

Parent material: Slope alluvium derived from

sandstone and shale Slope range: 2 to 15 percent

Elevation: 7,500 to 7,900 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Asaayi very gravelly fine sandy loam, in an area of mapping unit 418, Asaayi-Osoridge complex, 2 to 15 percent slopes; McKinley County, New Mexico; Page Quadrangle; 3,000 feet west and 500 feet north of the southeast corner of sec. 11, T.12 N., R.16 W.; latitude 35 degrees, 16 minutes, 45 seconds N. and longitude 108 degrees, 29 minutes, 45 seconds W.

Oi—0 to 1 inches; slightly decomposed pine needles and oak leaves.

A—1 to 3 inches; brown (7.5YR 5/4) very gravelly fine sandy loam, dark brown (7.5YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; about 40 percent gravel, 10 percent cobbles; neutral; abrupt smooth boundary.

Bt1—3 to 5 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and few medium roots; few very fine irregular pores; few faint clay films bridging sand grains; about 2 percent gravel; neutral; abrupt smooth boundary

Bt2—5 to 16 inches; light reddish brown (5YR 6/4) clay loam, reddish brown (5YR 5/4) moist; moderate very fine and fine subangular blocky structure; hard, firm, sticky and plastic; many very fine, fine, and few medium roots; few fine irregular pores; few distinct clay films on faces of peds; about 5 percent gravel; neutral; abrupt smooth boundary.

R—16 inches; sandstone—Chinle formation.

#### Range in Characteristics

Particle-size control section: 15 to 30 percent clay Depth to lithic contact: 10 to 20 inches to sandstone Reaction: neutral

*Reaction:* neutra

A horizon:

Hue: 5YR to 10YR

Value: 4 to 6 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist

Rock fragments: 0 to 40 percent total; 0 to 40 percent gravel; 0 to 10 percent cobbles; 0 to 5 percent

stones. All fragments are sandstone.

Bt horizons:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 2 or 4 dry or moist

Texture: fine sandy loam, sandy clay loam, or clay

Rock fragments: 0 to 10 percent total; 0 to 10 percent gravel, 0 to 5 percent cobbles. All fragments are

sandstone.

# Atarque Series

Taxonomic class: Loamy, mixed, superactive, mesic

Lithic Haplustalfs Depth class: Shallow Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas and cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 8 percent Elevation: 6,500 to 7,500 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 115 to 135 days

## **Typical Pedon**

Atarque sandy loam, in an area of mapping unit 305, Celavar-Atarque complex, 1 to 8 percent slopes; McKinley County, New Mexico; Thoreau NE Quadrangle; 600 feet south of the northeast corner of sec. 8, T. 14 N., R. 11 W.; latitude 35 degrees, 27 minutes, 44 seconds and longitude 108 degrees, 01 minute. 00 seconds.

- A—0 to 3 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few medium and fine and common very fine roots; common very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt1—3 to 9 inches; strong brown (7.5YR 4/6) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few medium and fine and common very fine roots; few very fine tubular pores; common prominent clay films bridging sand grains and lining pores; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Bt2—9 to 14 inches; yellowish red (5YR 4/6) sandy clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few medium and fine and common very fine roots; few very fine tubular pores; common prominent clay films bridging sand grains and lining pores; slightly

effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

2R—14 inches; sandstone.

## Range in Characteristics

Particle-size control section: 18 to 35 percent clay Depth to a lithic contact: 10 to 20 inches to sandstone Reaction: neutral in the surface and slightly alkaline in the subsoil

A horizon:

Hue: 7.5YR or 10YR Value: 5 dry, 3 to 5 moist Chroma: 4 dry, 4 to 6 moist

Texture: fine sandy loam or sandy loam

Bt horizon:

Hue: 5YR to 10YR Value: 4 dry, 3 or 4 moist Chroma: 6 dry, 3 to 6 moist

Texture: sandy clay loam or clay loam

## **Atchee Series**

Taxonomic class: Loamy-skeletal, mixed, active, calcareous, mesic Lithic Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Moderate to moderately slow

Geomorphic position: Mesas, cuestas, breaks, hills,

and ridges

Parent material: Slope alluvium over residuum derived

from sandstone and shale Slope range: 2 to 20 percent Elevation: 6,500 to 7,500 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Atchee fine sandy loam, in an area of mapping unit 258, Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes; McKinley County, New Mexico; Hunter's Point Quadrangle; about 1,700 feet west and 900 feet south of the northeast corner of sec. 23, T. 16 N., R. 21 W.; latitude 35 degrees, 36 minutes, 50 seconds and longitude 109 degrees, 02 minutes, 45 seconds.

A—0 to 2 inch; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; 2 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

C1—2 to 12 inches; light olive brown (2.5Y 5/4) extremely channery sandy clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine irregular pores; 70 percent channers and 15 percent flagstones; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

C2—12 to 14 inches; light olive brown (2.5Y 5/4) extremely channery sandy clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; common very fine and few medium roots; few very fine irregular pores; 70 percent channers and 15 percent flagstones; very slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

R—12 inches; fractured sandstone.

## Range in Characteristics

Particle-size control section: 10 to 27 percent clay and

35 to 90 percent rock fragments

Depth to lithic contact: 5 to 20 inches to sandstone Calcium carbonate equivalent: 0 to 5 percent Reaction: slightly or moderately alkaline

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 4 or 5 moist Chroma: 4 or 5 dry and moist

Rock fragments: 0 to 50 percent total; 0 to 50 percent channers and gravel; 0 to 20 percent flagstones and cobbles. All fragments are sandstone.

C horizon: Hue: 2.5Y

Value: 5 or 6 dry, 4 or 5 moist Chroma: 4 or 5 dry and moist

Textures: sandy loam, fine sandy loam, sandy clay

loam, clay loam, or loam

Rock fragments: 35 to 90 percent total; 35 to 90 percent channers and 0 to 20 percent flagstones.

All fragments are sandstone.

#### **Azabache Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Typic Natrargids
Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow

Geomorphic position: Valley floors, lava plateaus, and

volcanic cones

Parent material: Slope alluvium derived from basalt,

sandstone, and shale. Slope range: 2 to 8 percent

Elevation: 6,500 to 6,900 feet

Mean annual air temperature: 50 to 54 degrees F Mean annual precipitation: 8 to 10 inches

Frost-free period: 130 to 140 days

## **Typical Pedon**

Azabache extremely gravelly clay loam, in an area of mapping unit 280, Azabache extremely gravelly clay loam, 2 to 8 percent slopes; McKinley County, New Mexico; Cerro Alesna Quadrangle; 1,900 feet south and 2,300 feet east of the northwest corner of sec. 2, T. 14 N., R. 7 W.; latitude 35 degrees, 28 minutes, 25 seconds and longitude 107 degrees, 32 minutes, 59 seconds.

The surface is covered by 75 percent gravel and 1 percent cobbles.

- A—0 to 1 inches; very pale brown (10YR 7/3) extremely gravelly clay loam, brown (10YR 5/3) moist; strong medium and thick platy structure; slightly hard, friable, sticky and plastic; no observed roots; many very fine and fine vesicular pores; 75 percent gravel and 1 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary.
- Btn—1 to 5 inches; reddish brown (5YR 4/4) clay, dark reddish brown (5YR 3/4) moist; moderate medium and coarse columnar structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many distinct clay films on faces of peds; 1 percent gravel; EC of 4.9 mmhos/cm; SAR of 22; moderately alkaline (pH 8.4); clear smooth boundary.
- 2Btknz1—5 to 17 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate medium subangular blocky; very hard, very firm, sticky and very plastic; many very fine and fine and few medium roots; common fine tubular and few very fine vesicular pores; many prominent clay films bridging sand grains and on faces of peds; 30 percent gravel; violently effervescent; many very fine and fine masses of calcium carbonate and coating rock fragments; 9 percent calcium carbonate equivalent; common sodium sulfate crystals; EC of 8.9 mmhos/cm; SAR of 21; strongly alkaline (pH 8.6); clear wavy boundary.
- 2Btknz2—17 to 25 inches; yellowish brown (10YR 5/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine angular blocky structure; extremely hard, very firm, sticky and very plastic; few very fine roots; common fine

tubular and vesicular pores; 70 percent gravel and 5 percent cobbles; violently effervescent; many fine and medium masses of calcium carbonate and coating rock fragments; 10 percent calcium carbonate equivalent; common sodium sulfate crystals; EC of 8.5 mmhos/cm; SAR of 21; strongly alkaline (pH 8.6); gradual wavy boundary.

2Btknz3—25 to 32 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; moderate fine angular blocky structure; extremely hard, very firm, slightly sticky and plastic; few very fine roots; common fine tubular and vesicular pores; 70 percent gravel and 5 percent cobbles; strongly effervescent; many fine and medium masses of calcium carbonate and coating rock fragments; 5 percent calcium carbonate equivalent; common sodium sulfate crystals; EC of 4.3 mmhos/cm; SAR of 27; strongly alkaline (pH 9.0); gradual wavy boundary.

2Btknz4—32 to 50 inches; light yellowish brown (10YR 6/4) extremely gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; moderate fine angular blocky structure; extremely hard, very firm, slightly sticky and plastic; few very fine roots; common fine tubular and vesicular pores; 70 percent gravel and 5 percent cobbles; strongly effervescent; common fine and medium masses of calcium carbonate and coating rock fragments; 1 percent calcium carbonate equivalent; common sodium sulfate crystals; EC of 5.5 mmhos/cm; SAR of 17; strongly alkaline (pH 9.0); clear wavy boundary.

2Btnz—50 to 62 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; extremely hard, firm, slightly sticky and plastic; few very fine roots; few fine irregular pores; 35 percent gravel and 1 percent cobbles; strongly effervescent; very few fine masses of calcium carbonate; 1 percent calcium carbonate equivalent; common sodium sulfate crystals; EC of 5.5 mmhos/cm; SAR of 17; strongly alkaline (pH 9.0).

#### **Range in Characteristics**

Particle-size control section: 20 to 35 percent clay with greater than 35 percent sand and less than 35 percent rock fragments

Depth to horizons with greater than 35 percent rock fragments: 15 to 40 inches

Depth to sodium sulfate crystals: 5 to 30 inches

A horizon:

Value: 6 or 7 dry, 4 or 5 moist Chroma: 3 or 4 dry or moist

Rock fragments: 30 to 80 percent total; 30 to 75 percent gravel; 0 to 5 percent cobbles; 0 to 1 percent stones. All fragments are basalt.

Salinity: EC of 0 to 4 mmhos/cm Sodicity: SAR of 10 to 20

Reaction: slightly or moderately alkaline

Bt horizons:

Hue: 5YR, 7.5YR, or 10YR Value: 4 to 7 dry, 3 to 5 moist Chroma: 3 or 4 dry, 4 or 6 moist

Texture: clay, clay loam, or sandy clay in the upper part, with sandy clay loam and fine sandy loam in the lower part with particle size control section less than 35 percent clay

Rock fragments: 1 to 75 percent total; 1 to 70 percent gravel; 0 to 5 percent cobbles. All fragments are basalt

Note: When a horizon has greater than 35 percent rock fragments, it is too thin or is too far below the particle size control section to affect the particle size class.

Calcium carbonate equivalent: 1 to 15 percent

Salinity: EC of 4 to 16 mmhos/cm

Sodicity: SAR of 20 to 30 Gypsum: 0 to 1 percent

Reaction: moderately through very strongly alkaline

Some pedons have a Bk horizon below the Bt horizons.

#### **Bamac Series**

Taxonomic class: Sandy-skeletal, mixed, mesic Aridic

Ustorthents

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Very rapid

Geomorphic position: Hills and ridges
Parent material: Slope alluvium derived from

sandstone and conglomerate Slope range: 5 to 50 percent Elevation: 6,200 to 6,500 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 115 to 135 days

#### **Typical Pedon**

Bamac extremely gravelly sandy loam, in an area of mapping unit 566, Bamac extremely gravelly sandy loam, 5 to 50 percent slopes; McKinley County, New Mexico; Tekapo Quadrangle; 1,200 feet west and 1,200 feet north of the southeast corner of sec. 1, T. 9

N., R. 20 W.; latitude 35 degrees, 02 minutes, 08 seconds and longitude 108 degrees, 53 minutes, 42 seconds.

The surface is covered by about 65 percent gravel and 5 percent cobbles.

- A—0 to 2 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few medium and many very fine and fine roots; many fine irregular pores; 65 percent gravel and 5 percent cobbles; violently effervescent; 12 percent calcium carbonate equivalent; slightly alkaline; abrupt smooth boundary.
- Ck1—2 to 8 inches; brown (7.5YR 5/4) gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few coarse and medium and many very fine and fine roots; many fine irregular pores; 20 percent gravel; violently effervescent; many fine filaments and few fine masses of calcium carbonate; 14 percent calcium carbonate equivalent; slightly alkaline; clear wavy boundary.
- Ck2—8 to 30 inches; light brown (7.5YR 6/4) extremely gravelly coarse sand, brown (7.5YR 4/4) moist; massive; loose, very friable, nonsticky and nonplastic; common coarse, few medium and common very fine and fine roots; common very fine irregular pores; 80 percent gravel; violently effervescent; many fine filaments and concretions and few fine masses of calcium carbonate; 12 percent calcium carbonate equivalent; slightly alkaline; gradual wavy boundary.
- Ck3—30 to 63 inches; light brown (7.5YR 6/4) very cobbly coarse sand, brown (7.5YR 5/4) moist; massive; loose, very friable, nonsticky and nonplastic; few medium and very fine roots; common very fine irregular pores; 25 percent gravel and 30 percent cobbles; violently effervescent; many fine filaments and concretions and few fine masses of calcium carbonate; 14 percent calcium carbonate equivalent; slightly alkaline.

## Range in Characteristics

Particle-size control section: 2 to 5 percent clay and greater that 35 percent rock fragments

Percent calcium carbonate equivalent: 5 to 15 percent Reaction: slightly to moderately alkaline throughout

A horizon:

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4 moist

Rock fragments: 15 to 80 percent total; 15 to 65 percent gravel; 0 to 5 percent cobbles. All fragments are sandstone and siliceous gravel.

Ck horizons:

Hue: 7.5YR or 10YR

Value: 3 to 5 dry, 4 to 6 moist Chroma: 4 to 6 dry, 3 to 6 moist

Texture: sandy loam, coarse sand, or sand Rock fragments: 10 to 80 percent total; 10 to 80 percent gravel; 0 to 30 percent cobbles. All fragments are sandstone and siliceous gravel.

# **Banquito Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Calcidic Haplustalfs

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Lava plateaus

Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope range: 1 to 3 percent Elevation: 7,200 to 7,800 feet

Mean annual air temperature: 47 to 53 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Banquito very fine sandy loam, in an area of mapping unit 390, Banquito very fine sandy loam, 1 to 3 percent slopes; McKinley County, New Mexico; Cerro Parido Quadrangle; latitude 35 degrees, 33 minutes, 38 seconds and longitude 107 degrees, 22 minutes, 29 seconds.

- A—0 to 2 inches; brown (10YR 5/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine irregular pores; 10 percent gravel and 1 percent cobbles; slightly effervescent; slightly alkaline (pH 7.4); clear smooth boundary.
- Btk1—2 to 9 inches; brown (7.5YR 5/3) clay loam, brown (7.5YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine irregular pores; many distinct clay films bridging sand grains and on faces of peds; 1 percent gravel; violently effervescent; few fine masses and weakly cemented concretions of calcium carbonate; 11 percent calcium carbonate

equivalent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—9 to 17 inches; grayish brown (10YR 5/2) loam, brown (7.5YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; common distinct clay films bridging sand grains and on faces of peds; 5 percent gravel; violently effervescent; many medium weakly cemented concretions and few fine masses of calcium carbonate; 26 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear irregular boundary.

Bk1—17 to 22 inches; grayish brown (10YR 5/2) sandy clay loam, brown (7.5YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 5 percent gravel; violently effervescent; many fine and medium weakly cemented concretions and masses of calcium carbonate; 45 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—22 to 30 inches; light gray (10YR 7.2) sandy loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few fine irregular pores; 5 percent gravel; violently effervescent; many medium weakly cemented concretions of calcium carbonate; 55 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk3—30 to 36 inches; light gray (10YR 7.2) sandy loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few fine irregular pores; 10 percent gravel and 1 percent cobbles with common soft basalt fragments; violently effervescent; many medium weakly cemented concretions of calcium carbonate; 35 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); abrupt irregular boundary.

2R—36 inches; basalt (with many very fine and fine coats of calcium carbonate at the upper contact).

## Range in Characteristics

Particle-size control section: 20 to 35 percent clay and greater than 30 percent sand

Depth to lithic contact: 20 to 40 inches to basalt Depth to calcic horizon: 9 to 25 inches with 15 to 55 percent calcium carbonate equivalent Reaction: slightly alkaline in the surface and moderately alkaline in the subsoil

A horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 5 or 6 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist

Rock fragments: 5 to 15 percent total; 0 to 15 percent gravel; 0 to 2 percent cobbles. All fragments are

basalt and sandstone.

Btk horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 4 or 5 dry, 3 to 5 moist Chroma: 2 or 3 dry, 2 to 4 moist

Texture: clay loam, loam, or sandy clay loam
Rock fragments: 0 to 5 percent total; 0 to 5 percent
gravel; 0 to 5 percent cobbles. All fragments are
basalt and sandstone.

Calcium carbonate equivalent: 5 to 30 percent

Bk horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 5 to 7 dry, 4 or 5 moist Chroma: 2 to 4 dry or moist

Texture: sandy loam, sandy clay loam or clay loam Rock fragments: 5 to 15 percent total; 5 to 15 percent gravel; 0 to 5 percent cobbles. All fragments are basalt.

Calcium carbonate equivalent: 15 to 55 percent

## **Barboncito Series**

Taxonomic class: Loamy, mixed, superactive, mesic

Lithic Ustic Haplargids

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Cuestas, hills, and ridges Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 3 percent Elevation: 6,400 to 6,800 feet

Mean annual air temperature: 45 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Barboncito loamy fine sand, in an area of mapping unit 245, Buckle-Gapmesa-Barboncito complex, 1 to 6 percent slopes; McKinley County, New Mexico; Gallup West Quadrangle; 400 feet east and 2,200 feet south of sec. 18, T.16 N., R.18 W.; latitude 35 degrees, 37

minutes, 05 seconds N. and 108 degrees, 47 minutes, 30 seconds W.

- A—0 to 2 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; weak very fine granular structure; loose, very friable, nonsticky and nonplastic; common very fine roots; 1 percent sandstone gravel; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Bt1—2 to 6 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine irregular pores; few faint clay films on faces of peds; slightly alkaline (pH 7.8); clear smooth boundary.
- Btk—6 to 11 inches; yellowish brown (10 YR 5/4) clay loam, yellowish brown (10 YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine irregular pores; few faint clay films on faces of peds; common very fine and fine masses of calcium carbonate; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

R—11 inches; sandstone.

## **Range in Characteristics**

Particle-size control section: 18 to 35 percent clay Depth to lithic contact: 10 to 20 inches

A horizon: Hue: 10YR

Value: 4 to 6 dry, 3 or 4 moist Chroma: 3 dry and moist

*Textures:* loamy fine sand or fine sandy loam *Rock fragments:* 0 to 5 percent sandstone gravel

Reaction: slightly alkaline

Bt horizon: Hue: 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist

Calcium carbonate equivalent:1 to 5 percent

Textures: fine sandy loam, loam, or sandy clay loam

Btk horizon: Hue: 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 dry and moist

Textures: sandy clay loam or clay loam

Rock fragments: 0 to 5 percent sandstone gravel Calcium carbonate equivalent: 1 to 5 percent Reaction: slightly to moderately alkaline

Some pedons have thin Cr horizons above the lithic contact.

# **Benally Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Typic Natrargids
Depth class: Deep and very deep
Drainage class: Well drained
Permeability: Moderately slow
Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 1 to 5 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

## **Typical Pedon**

Benally sandy clay loam, in an area of mapping unit 116, Fajada-Huerfano-Benally complex, 1 to 5 percent slopes; McKinley County, New Mexico; Milk Lake Quadrangle; 508 feet west and 1,980 feet south of the northeast corner of sec. 10, T. 19 N., R. 13 W.; latitude 35 degrees, 53 minutes, 12 seconds and longitude 108 degrees, 12 minutes, 30 seconds.

- A—0 to 2 inches; yellowish brown (10YR 5/6) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine irregular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
- Btn—2 to 11 inches; yellowish brown (10YR 5/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium columnar structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine irregular pores; common prominent clay films bridging sand grains and lining pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.
- Btkn—11 to 18 inches; dark yellowish brown (10YR 4/6) sandy clay loam, yellowish brown (10YR 5/6) moist; weak medium prismatic structure; hard, friable, slightly sticky and nonplastic; few medium, very fine and fine roots; few very fine irregular pores; common distinct clay films bridging sand grains and lining pores; strongly effervescent; few fine irregular filaments of calcium carbonate; very strongly alkaline (pH 9.2); clear smooth boundary.

Btknz—18 to 45 inches; yellowish brown (10YR 5/6) sandy clay loam, yellowish brown (10YR 5/6) moist; massive; hard, friable, slightly sticky and

nonplastic; few very fine and fine roots; common very fine irregular pores; common distinct clay films bridging sand grains; strongly effervescent; secondary gypsum, calcium carbonate, and sodium sulfate occurs as few fine irregular masses, filaments, and very fine crystals; moderately alkaline (pH 8.2); abrupt smooth boundary.

2Cr-45 inches; weathered sandstone.

## **Range in Characteristics**

Particle-size control section: 18 to 35 percent clay Depth to paralithic contact: 40 to more than 60 inches

to weathered sandstone Sodicity: SAR of 15 to 30

Calcium carbonate equivalent: 1 to 10 percent

A horizon:

Hues: 10YR or 2.5Y

Value: 5 or 6 dry; 4 or 5 moist

Chroma: 3 to 6 dry

Texture: sandy clay loam or sandy loam

Rock fragments: 0 to 15 percent sandstone gravel

Reaction: moderately alkaline

Btn horizon:

Hues: 10YR or 2.5Y Value: 3 or 5 moist Chroma: 3 or 4 moist

Rock fragments: 0 to 10 percent sandstone gravel

Reaction: strongly or very strongly alkaline

Btkn and Btknz horizon: Hues: 10YR or 2.5Y Chroma: 4 to 6 moist

Rock fragments: 0 to 10 percent sandstone gravel

Gypsum: 5 to 10 percent

Reaction: moderately to strongly alkaline

The Cr horizon may consist of either weathered

sandstone or shale.

Some pedons are very deep, and do not have a paralithic contact above 60 inches.

# **Berryhill Series**

Taxonomic class: Fine, mixed, superactive, mesic

Chromic Gypsitorrerts

Depth class: Very deep

Drainage class: Well drained

Permeability: Very slow

Geomorphic position: Valley sides, valley floors, and

hills

Parent material: Slope alluvium derived from shale

Slope range: 2 to 8 percent

Elevation: 7,000 to 7,800 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Berryhill clay, in an area of mapping unit 380, Berryhill-Casamero clays, 2 to 10 percent slopes; McKinley County, New Mexico; Goat Mountain Quadrangle; 1,000 feet west and 1,800 feet north of the southeast corner of sec. 3, T. 14 N., R. 11 W.; latitude 35 degrees, 28 minutes, 09 seconds and longitude 107 degrees, 59 minutes, 06 seconds (fig. 15).

A—0 to 2 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; moderate medium granular structure; soft, friable, very sticky and very plastic; common very fine and fine roots; common very fine vesicular and few fine irregular pores; few cracks 0.5 inch wide; 1 percent gypsum; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bw—2 to 12 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; common fine irregular and few fine vesicular pores; common pressure faces; few cracks 0.5 inch wide; 1 percent gypsum; strongly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Bssyz1—12 to 26 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate medium and coarse subangular blocky structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and few fine roots; few fine irregular pores; many pressure faces; common 0.5-inch diameter slickensides; few cracks 0.5 inch wide extending to 25 inches; common medium gypsum and sodium sulfate crystals; 33 percent gypsum; strongly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Bssyz2—26 to 39 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; extremely hard, extremely firm, very sticky and very plastic; few fine roots; few fine irregular pores; common pressure faces; few 0.5-inch slickensides; few fine gypsum and sodium sulfate crystals; 2 percent gypsum; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary.

Bssyz3—39 to 70 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; extremely hard, extremely firm; very

sticky and very plastic; few very fine roots; few fine irregular pores; many pressure faces; common fine gypsum and sodium sulfate crystals; 7 percent gypsum; strongly effervescent; moderately alkaline (pH 8.0).

## **Range in Characteristics**

Particle-size control section: 40 to 55 percent clay Depth to gypsum and sodium sulfate accumulations: 3 to 32 inches

Depth to the gypsic horizon: 3 to 32 inches with 10 to 35 percent gypsum, gypsum content decreases in the underlying horizon

Reaction: slightly or moderately alkaline

Vertic properties: gilgai microrelief ranges up to 2 inches; cracks range from 0.5 to 2 inches in width and 2 to 30 inches vertically; few to many pressure faces and intersecting slickensides below 2 inches

A horizon:

Hue: 10YR or 2.5Y Value: 5 or 6 dry

Chroma: 2 to 4 dry and moist

Rock fragments: 0 to 20 percent sandstone and shale

gravel and channers

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 0 to 2

Bw horizon:

Hue: 10YR or 2.5Y Value: 3 or 4 moist Chroma: 3 or 4 moist

Salinity: EC of 2 to 4 mmhos/cm

Sodicity: SAR of 2 to 5

Bssyz1 horizon: Hue: 10YR or 2.5Y

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 2 to 4 moist

Calcium carbonate equivalent: 1 to 10 percent

Gypsum and sodium sulfate: Few to common clusters

of crystals

Percent gypsum: 10 to 35 percent Salinity: EC of 2 to 4 mmhos/cm

Sodicity: SAR of 2 to 5

Bssyz2 and Bssyz3 horizons:

Hue: 10YR or 2.5Y

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 2 to 4 moist

Calcium carbonate equivalent: 1 to 10 percent

Gypsum and sodium sulfate: Few to common clusters

of crystals

Percent gypsum: 2 to 8 percent Salinity: EC of 2 to 8 mmhos/cm

Sodicity: SAR of 2 to 8

#### **Betonnie Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Ustic Haplargids Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, valley sides,

hills, and ridges

Parent material: Eolian material and fan and slope

alluvium derived from sandstone

Slope range: 1 to 8 percent Elevation: 6,400 to 6,900 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Betonnie sandy loam, in an area of mapping unit 11, Doakum-Betonnie complex, 1 to 8 percent slopes; McKinley County, New Mexico; Ojo Encino Mesa Quadrangle; 1,600 feet east and 200 feet south of the northwest corner of sec. 22, T. 20 N., R. 5 W.; latitude 35 degrees, 57 minutes, 24 seconds and longitude 107 degrees, 21 minutes, 29 seconds.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak thin platy structure parting to moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common fine and many very fine roots; common very fine and fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Bt1—3 to 11 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine irregular pores; common distinct clay films bridging sand grains; slightly alkaline (pH 7.4); clear smooth boundary.

Bt2—11 to 21 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, very friable, nonsticky and nonplastic; hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; few distinct clay films bridging sand grains; slightly alkaline (pH 7.4); gradual irregular boundary.

Bk1—21 to 29 inches; yellowish brown (10YR 5/8) loamy sand, dark yellowish brown (10YR 4/6) moist; massive; very hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; slightly

effervescent; slightly alkaline (pH 7.4); gradual smooth boundary.

Bk2—29 to 45 inches; yellowish brown (10YR 5/8) loamy sand, dark yellowish brown (10YR 4/6) moist; massive; very hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; strongly effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6); gradual smooth boundary.

Bk3—45 to 52 inches; yellowish brown (10YR 5/8) sandy loam, dark yellowish brown (10YR 4/6) moist; massive; very hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; strongly effervescent; few fine irregular seams and filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.

Btkb—52 to 57 inches; yellowish brown (10YR 5/4) sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine irregular pores; common prominent clay films on ped faces; violently effervescent; common medium seams and filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.

C—57 to 70 inches; brownish yellow (10YR 6/8) loamy sand, yellowish brown (10YR 5/6) moist; massive; very hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 10 to 18 percent clay Krotovinas: Cicada casts arranged vertically; extending from the surface to 40 inches and concentrated from 11 to 30 inches

Reaction: neutral in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Hue: 7.5YR or 10YR

Value: 3 to 5 dry and moist

Chroma: 3 or 4 dry and moist

Bt horizons:

Hue: 7.5YR or 10YR Value: 4 or 5 dry

Chroma: 4 to 6 dry and moist

Texture: sandy loam or fine sandy loam

Bk horizons:

Hue: 7.5YR or 10YR

Value: 5 to 7 dry; 4 to 6 moist Chroma: 6 to 8 dry; 4 to 6 moist

Texture: sandy loam, fine sandy loam, loamy sand, or

loamy fine sand

Calcium carbonate equivalent: 1 to 5 percent

C horizon: Hue: 10YR

Value: 6 dry, 4 or 5 moist

Chroma: 4 to 6

Texture: loamy sand or sandy loam

Calcium carbonate equivalent: 1 to 5 percent

#### **Blancot Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Valley sides

Parent material: Fan alluvium derived from sandstone

and shale

Slope range: 1 to 3 percent Elevation: 6,400 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches Frost-free period: 100 to 135 days

## **Typical Pedon**

Blancot fine sandy loam, in an area of mapping unit 10, Tsosie-Councelor-Blancot fine sandy loams, 1 to 3 percent slopes; McKinley County, New Mexico; Ojo Encino Mesa Quadrangle; 1,000 feet east and 1,000 feet south of the northwest corner of sec. 9, T. 20 N., R. 5 W.; latitude 35 degrees, 58 minutes, 57 seconds and longitude 107 degrees, 22 minutes, 35 seconds.

A—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots; few very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Bt1—3 to 11 inches; dark yellowish brown (10YR 4/4) clay loam, dark brown (10YR 4/3) moist; strong medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few coarse and common fine and very fine roots; few fine tubular pores; many prominent clay films on faces of peds and lining pores; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt2—11 to 16 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and

nonplastic; few coarse and medium and common fine and very fine roots; few fine tubular pores; common faint clay films bridging sand grains; slightly alkaline (pH 7.6); clear smooth boundary.

- C1—16 to 37 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine and common very fine roots; few very fine tubular pores; slightly alkaline (pH 7.6); clear smooth boundary.
- C2—37 to 65 inches; brown (10YR 5/3) loamy sand, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots; few very fine irregular pores; very slightly effervescent; slightly alkaline (pH 7.6).

## **Range in Characteristics**

Particle-size control section: 18 to 35 percent clay Reaction: neutral in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Hue: 2.5Y or 10YR

Value: 5 to 7 dry and moist Chroma: 3 or 4 moist

Bt horizons:

Hue: 2.5Y or 10YR

Value: 4 or 5 dry and moist Chroma: 3 to 6 moist

Texture: clay loam or sandy clay loam

C horizons:

Hue: 2.5Y or 10YR Value: 3 to 5 moist Chroma: 3 to 6 moist

Texture: sandy loam, loamy sand, or fine sandy loam

Calcium carbonate equivalent: 0 to 1 percent

# **Bluesky Series**

Taxonomic class: Mixed, frigid Lithic Ustipsamments

Depth class: very shallow and shallow Drainage class: Excessively drained

Permeability: Very rapid

Geomorphic position: Structural benches on escarpments of mesas and cuestas

Parent material: Eolian and slope alluvium derived from

sandstone

Slope range: 5 to 20 percent Elevation: 7,100 to 7,700 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Bluesky fine sand, in an area of mapping unit 416, Rock Outcrop-Bluesky complex, 5 to 80 percent slopes; McKinley County, New Mexico; Ramah Quadrangle; 800 feet east and 2,000 feet south of the northwest corner of sec. 14, T. 11 N., R. 16 W.; latitude 35 degrees, 11 minutes, 10 seconds and longitude 108 degrees, 29 minutes, 48 seconds.

- A—0 to 5 inches; yellowish brown (10YR 5/4) fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, loose, nonsticky and nonplastic; common very fine roots; neutral (pH 7.2); abrupt smooth boundary.
- C—5 to 8 inches; gray (10YR 6/1) fine sand, gray (10YR 6/1) moist; single grain; loose, loose, nonsticky and nonplastic; common very fine and fine roots; neutral (pH 7.2); abrupt smooth boundary.
- R—8 inches; Cowsprings and Entrada Sandstone.

#### Range in Characteristics

Particle-size control section: 1 to 5 percent clay Depth to a lithic contact: 5 to 20 inches to sandstone Reaction: Neutral to slightly alkaline

A horizon:

Hue: 5YR or 10YR

Value: 5 dry, 4 or 5 moist

Chroma: 3 or 4

Textures: fine sand or loamy fine sand

Rock fragments: 0 to 20 percent total; 0 to 10 percent gravel; 0 to 10 percent cobbles; 0 to 5 percent

stones. All fragments are sandstone.

C horizon:

Hue: 2.5YR or 10YR

Value: 3, 4, or 6 moist, 5 or 6 dry

Chroma: 1, 4, or 6

Textures: fine sand or loamy fine sand

Rock fragments: 0 to 25 percent sandstone gravel.

#### **Bluewater Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Pachic Argiustolls Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 1 percent Elevation: 7,200 to 7,600 feet

Mean annual air temperature: 48 to 53 degrees F

Mean annual precipitation: 13 to 16 inches Frost-free period: 100 to 135 days

## **Typical Pedon**

Bluewater loam, in an area of mapping unit 312, Bluewater loam, 0 to 1 percent slopes; McKinley County, New Mexico; Pine Canyon Quadrangle; 600 feet east, 2,400 feet north of the southwest corner of sec. 26, T. 13 N., R. 13 W.; latitude 35 degrees, 19 minutes, 38 seconds and longitude 108 degrees, 11 minutes, 25 seconds.

- A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and few medium roots; few fine irregular pores; slightly effervescent; 11 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Btk1—2 to 11 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine, fine, and few medium roots; common very fine and fine tubular pores; many prominent clay films on faces of peds; slightly effervescent; many very fine calcite crystals; 13 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- Btk2—11 to 28 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine, fine, and few medium roots; common very fine tubular pores; common distinct clay films on faces of peds; strongly effervescent; many very fine calcite crystals; 19 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); gradual wavy boundary.
- Btk3—28 to 50 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; few very fine distinct brown 7.5YR 4/4 redox concentrations; moderate fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; few very fine tubular pores; common distinct clay films on faces of peds; violently effervescent; common very fine masses and gravel size concretions of calcium carbonate; many very fine translucent calcite crystals; 28 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Btk4—50 to 70 inches; grayish brown (10YR 5/2) clay, very dark grayish brown (10YR 3/2) moist;

common fine distinct brown 7.5YR 4/4 redox concentrations; weak medium subangular blocky structure; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few fine irregular pores; apparent water table at 50 inches; common faint clay films on faces of peds; violently effervescent; many very fine and fine concretions and filaments of calcium carbonate; many very fine translucent calcite crystals; 11 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); gradual smooth boundary.

Bk—70 to 80 inches; light brownish gray (10YR 6/2) clay, dark grayish brown (10YR 4/2) moist; common fine distinct strong brown (7.5YR 4/6) and few fine faint light gray (10YR 7/1) redox concentrations and depletions; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine roots; few fine irregular pores; horizon is saturated by water table; violently effervescent; many very fine and fine masses and gravel-sized concretions of calcium carbonate; many very fine translucent calcite crystals; 26 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 25 to 35 percent clay
Depth to calcic horizon: 10 to 35 inches and 15 to 30
percent calcium carbonate equivalent
Thickness of mollic epipedon: 20 to 40 inches
Depth to water table: 30 to 51 inches
Salinity: EC of 0 to 2 mmhos/cm
Redoximorphic features:

Redox concentrations Redox depletions Depth: 23 to 45 inches 43 to 51 inches Quantity: few to many few to common Size: very fine and fine very fine and fine Contrast: distinct faint or distinct Hue: 5YR to 10YR 7.5YR or 10YR 4 or 5 moist 6 or 7 moist Value: Chroma: 4 or 6 moist 0 to 2 moist

#### A horizon:

Value: 3 or 4 dry, 2 or 3 moist Chroma: 2 or 3 dry, 1 or 2 moist

Calcium carbonate equivalent: 5 to 15 percent

Reaction: neutral or slightly alkaline

Btk horizons:

Hue: 7.5YR or 10YR

Value: 3 to 5 dry, 2 or 3 moist

Chroma: 2 or 3

Texture: clay loam or clay

Rock fragments: 0 to 5 percent gravel-sized indurated calcium carbonate concretions

Calcium carbonate equivalent: 10 to 30 percent Reaction: slightly or moderately alkaline

Bk horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 3 to 6 dry, 3 or 4 moist

Chroma: 2 or 3

Rock fragments: 0 to 5 percent gravel-sized indurated

calcium carbonate concretions

Calcium carbonate equivalent: 5 to 30 percent Reaction: slightly or moderately alkaline

Some pedons have a Bt horizon.

# **Bond Series**

Taxonomic class: Loamy, mixed, superactive, mesic

Lithic Ustic Haplargids Depth class: Shallow

Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 1 to 8 percent Elevation: 6,500 to 7,200 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# **Typical Pedon**

Bond fine sandy loam, in an area of mapping unit 220, Hagerwest-Bond fine sandy loams, 1 to 8 percent slopes; McKinley County, New Mexico; Heart Rock Quadrangle; 1,000 feet east and 600 feet north of the southwest corner of sec. 2, T. 16 N., R. 12 W.; latitude 35 degrees, 38 minutes, 24 seconds and longitude 108 degrees, 05 minutes.

A—0 to 2 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine irregular pores; 2 percent gravel; neutral; abrupt smooth boundary.

Bt1—2 to 5 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine irregular pores; few faint clay films bridging sand grains; 2 percent gravel; neutral, abrupt smooth boundary.

Bt2—5 to 14 inches; strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 4/6) moist;

moderate medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; common fine and many very fine roots; common very fine irregular pores; common distinct clay films on faces of peds, lining pores and bridging sand grains; 10 percent cobbles; neutral; abrupt smooth boundary.

2Cr—14 to 16 inches; weathered sandstone; abrupt smooth boundary.

2R—16 inches: sandstone.

# Range in Characteristics

Particle-size control section: 18 to 35 percent clay Depth to a lithic contact: 10 to 20 inches to sandstone

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry; 4 or 5 moist Chroma: 4 dry and moist

Rock fragments: 0 to 5 percent gravel-sized sandstone

fragments.

Reaction: neutral or slightly alkaline

Bt horizon: *Hue:* 7.5YR

Value: 5 or 6 dry; 4 or 5 moist Chroma: 4 to 6 dry and moist

Texture: fine sandy loam, sandy clay loam, or sandy

loam

Rock fragments: 0 to 10 percent total; 0 to 10 percent gravel; 0 to 10 percent cobbles. All fragments are sandstone.

Reaction: neutral to moderately alkaline Calcium carbonate equivalent: 0 to 5 percent

Some pedons have a Btk or Bk horizon.

#### **Bosonoak Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Very deep Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Valley sides and drainageways Parent material: Fan alluvium derived from siltstone

and shale

Slope range: 1 to 5 percent Elevation: 6,500 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Bosonoak loam, in an area of mapping unit 366, Bosonoak loam, 1 to 5 percent slopes; McKinley County, New Mexico; Vanderwagon Draw Quadrangle: 1,600 feet south and 500 feet east of the northwest corner of sec. 27, T. 11 N., R. 19 W.; latitude 35 degrees, 09 minutes, 30 seconds and longitude 108 degrees, 50 minutes, 15 seconds.

- A-0 to 2 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; weak medium and thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine irregular pores; slightly effervescent; slightly alkaline; abrupt smooth boundary.
- Bt—2 to 5 inches; reddish brown (2.5YR 4/4) clay loam, dark reddish brown (2.5YR 3/4) moist; strong thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and few medium roots; few fine irregular pores; many distinct clay films on faces of peds; slightly effervescent; moderately alkaline; clear smooth boundary.
- Btk1—5 to 28 inches; reddish brown (2.5YR 4/4) clay loam, dark reddish brown (2.5YR 3/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common very fine, fine, and few medium roots; common fine irregular pores; many prominent clay films on faces of peds; strongly effervescent; common fine and medium filaments and masses of calcium carbonate; moderately alkaline; clear wavy boundary.
- Btk2—28 to 40 inches; reddish brown (2.5YR 4/4) loam, reddish brown (2.5YR 3/4) moist; moderate medium and coarse prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; many distinct clay films on faces of peds and bridging sand grains; strongly effervescent; common fine and medium filaments and masses of calcium carbonate; moderately alkaline; clear wavy boundary.
- Btk3—40 to 63 inches; weak red (10R 5/4) loam, weak red (10R 4/4) moist; moderate medium and coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds and bridging sand grains; strongly effervescent; common fine and medium filaments and masses of calcium carbonate; moderately alkaline; clear wavy boundary.
- Btk4—63 to 80 inches; weak red (10R 5/4) silt loam, weak red (10R 4/4) moist; moderate medium coarse subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; common fine irregular pores;

common faint clay films on faces of peds and bridging sand grains; strongly effervescent; common fine and medium filaments and masses of calcium carbonate; moderately alkaline.

## Range in Characteristics

Particle-size control section: 25 to 35 percent clay Depth to secondary calcium carbonate: 5 to 20 inches. Most profiles are calcareous to the surface. Calcium carbonate equivalent: 0 to 1 percent in the surface and 1 to 10 percent in the lower horizons Rock fragments: 0 to 5 percent siliceous gravel Reaction: slightly alkaline to moderately alkaline Salinity: EC of 0.5 to 2.5

A horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist Textures: silt loam or loam

Bt horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6

Textures: silty clay loam or clay loam

Btk horizon: Hue: 10R to 5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6

Textures: silty clay loam, clay loam, or silt loam

Salinity: EC of 0.4 to 2.5

# **Breadsprings Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustifluventic Haplocambids

Depth class: Very Deep Drainage class: Well drained Permeability: Moderately slow Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,100 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Breadsprings loam, in an area of mapping unit 240, Breadsprings and Nahodish soils, 0 to 2 percent slopes; McKinley County, New Mexico; Manuelito Quadrangle; about 300 feet west and 500 feet south of the northeast corner of sec. 36, T. 15 N., R. 20 W. 35

degrees, 29 minutes, 35 seconds north latitude and 108 degrees, 53 minutes, 50 seconds west longitude.

A—0 to 3 inches; light olive brown (2.5Y 5/3) loam, olive brown (2.5Y 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few medium roots; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw1—3 to 7 inches; light olive brown (2.5Y 5/3) loam, olive brown (2.5Y4/3) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and few medium roots; 1 percent gravel; slightly effervescent; slightly alkaline (pH 8.0); abrupt smooth boundary.

Bw2—7 to 14 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots; many very fine irregular pores; discontinuous thin stratification of very fine sand and silt loam; strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk—14 to 22 inches; light olive brown (2.5Y 5/3) fine sandy loam, olive brown (2.5Y 4/3) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few very fine irregular pores; slightly effervescent; few fine masses of calcium carbonate; moderately alkaline (pH 8.2); clear wavy boundary.

Ck1—22 to 29 inches; light olive brown (2.5Y 5/3) silt loam, olive brown (2.5Y 4/3) moist; massive with pockets of thin stratification of silt and very fine sand; soft, very friable, slightly sticky and nonplastic; common very fine roots; few very fine irregular pores; few distinct yellowish brown (10YR 5/6), redox concentrations; slightly effervescent; few very fine masses and filaments of calcium carbonate; moderately alkaline (pH 8.2); abrupt wavy boundary.

Ck2—29 to 36 inches; light olive brown (2.5Y 5/3) loam, olive brown (2.5Y 4/3) moist; weak platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; common very fine coal fragments; very slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.2); abrupt wavy boundary

Ck3—36 to 70 inches; light olive brown (2.5Y 5/3) silt loam, olive brown (2.5Y 4/3) moist; weak platy structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine irregular pores; discontinuous stratification of fine

and medium sand; common distinct yellowish brown (10YR 5/6) redox concentrations; very slightly effervescent; few very fine masses and filaments of calcium carbonate; moderately alkaline (pH 8.2).

## **Range in Characteristics**

Particle-size control section: 20 to 34 percent clay Calcium carbonate equivalence: 0 to 15 percent.

Gypsum percent: 0 to 2 percent Rock fragments: 0 to 5 percent gravel

Sodicity: SAR of 0 to 5

Salinity: EC of 0 to 3 mmhos/cm

Reaction: slightly alkaline in the surface to moderately

alkaline in the subsoil

A horizon:

Hue: 2.5Y or 10YR

Value: 4 to 6 dry, 3 to 5 moist Chroma: 2 to 4 dry or moist

Textures: loam, sandy clay loam, silt loam, and silty

clay loam

Bw and Bk horizon: Hue: 2.5Y or 10YR

Value: 4 to 6 dry, 2 to 6 moist Chroma: 3 or 4 dry or moist

Texture: sandy clay loam, loam, or clay loam.

C, Ck, or Cky horizons: *Hue*: 2.5Y or 10YR

Value: 5 or 6 dry, 2 to 6 moist Chroma: 3 to 6 dry or moist

Redox features: If present, they range from few to common, faint to distinct, 10YR 5/6 or 6/6 redox concentrations and occur predominantly as relict features.

*Texture:* silt loam, fine sandy loam, sandy clay loam, clay loam, or loam

# **Bryway Series**

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Paleustalfs

Depth class: Moderately deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Slope alluvium over residuum derived

from shale and sandstone Slope range: 2 to 8 percent Elevation: 6,800 to 7,600 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Bryway sandy loam, in an area of mapping unit 317, Highdye-Evpark-Bryway complex, 2 to 20 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 2,200 feet west and 1,900 feet north of the southeast corner of sec. 22, T. 10 N., R. 17 W.; latitude 35 degrees, 04 minutes, 50 seconds and longitude 108 degrees, 37 minutes, 01 seconds.

- A—0 to 4 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 2 percent sandstone gravel; neutral (pH 6.8); abrupt smooth boundary.
- Bt1—4 to 10 inches; reddish brown (5YR 4/4) clay, dark reddish brown (5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine and common medium roots; common fine irregular pores; many prominent clay films on faces of peds; neutral (pH 6.8); clear smooth boundary.
- Bt2—10 to 23 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine irregular pores; many prominent clay films on faces of peds; few soft shale fragments; slightly alkaline (pH 7.4); clear smooth boundary. 2Cr—23 inches; shale.

#### Range in Characteristics

Particle-size control section: 35 to 55 percent clay
Depth to paralithic contact: 20 to 40 inches to shale or
shale interbedded with soft sandstone
Reaction: neutral in the surface and slightly to
moderately alkaline in the subsoil

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry, 3 or 4 moist

Chroma: 3 or 4

Texture: sandy loam or loam

Rock fragments: 0 to 10 percent sandstone gravel

Bt horizons:

Hue: 5YR, 7.5YR, or 10YR Value: 4 to 6 dry, 3 to 5 moist Chroma: 3, 4, or 6 moist

Texture: dominantly clay and clay loam, but some

sandy clay textures do occur

Btk or Bk horizons (when present):

Hue: 7.5YR, 10YR, or 2.5Y

Value: 3 to 5 moist Chroma: 3 or 4 moist

Textures: dominantly clay and clay loam, but some

sandy clay textures do occur

Calcium carbonate equivalent: 0 to 5 percent

## **Buckle Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids Depth class: Very deep Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Cuestas, valley sides,

drainageways, hills, and ridges

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope range: 1 to 8 percent Elevation: 6,400 to 6,800 feet

Mean annual air temperature: 45 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Buckle fine sandy loam, in an area of mapping unit 244, Buckle fine sandy loam, 1 to 8 percent slopes; McKinley County, New Mexico; Twin Lake Quadrangle; 2,600 feet west and 1,600 feet south of the northeast corner of sec. 1, T. 16 N., R. 19 W.; latitude 35 degrees, 38 minutes, 54 seconds and longitude 108 degrees, 48 minutes, 05 seconds.

- A—0 to 4 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; slightly alkaline (pH 7.6); clear smooth boundary.
- Bt1—4 to 14 inches; brown (7.5YR 5/3) sandy clay loam, dark brown (7.5YR 4/3) moist; weak very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few distinct clay films on faces of peds; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bt2— 14 to 22 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic parting to moderate very fine and fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many very fine, fine and few medium roots; few very fine irregular pores; many distinct clay films on faces of peds; slightly alkaline (pH 7.6); abrupt wavy boundary.

Btk1—22 to 34 inches; brown (10YR 5/3) loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; common distinct clay films on faces of peds; strongly effervescent; many very fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btk2—34 to 48 inches; yellowish brown (10YR 5/4) clay loam; dark yellowish brown (10YR 4/4) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; few very fine irregular pores; few distinct clay films on faces of peds; strongly effervescent; common very fine masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—48 to 62 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 5/4) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; very slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk2—62 to 75 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine irregular pores; slightly effervescent; many very fine masses of calcium carbonate; moderately alkaline (pH 8.0).

## Range in Characteristics

Particle-size control section: 18 to 35 percent clay and greater than 40 percent sand

Calcium carbonate equivalent: 0 to 1 percent in the surface and 1 to 10 percent in the lower subsoil Reaction: slightly alkaline in the surface and slightly to moderately alkaline in the subsoil

A horizon: Hue: 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist

Bt horizon: *Hue:* 10YR

Value: 4 or 5 dry and moist Chroma: 4 dry and moist

Texture: sandy clay loam or clay loam

Bk horizon: *Hue:* 10YR

Value: 4 or 5 dry and moist Chroma: 4 dry and moist

Texture: sandy clay loam, clay loam, or fine sandy

loam

## Cabezon Series

Taxonomic class: Clayey, smectitic, mesic Lithic

Argiustolls

Depth class: Shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava plateau

Parent material: Eolian material over residuum derived

from basalt

Slope range: 2 to 8 percent Elevation: 6,800 to 8,000 feet

Mean annual air temperature: 47 to 53 degrees F Mean annual precipitation: 14 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Cabezon very cobbly loam, in an area of mapping unit 395, Cabezon-Mcorreon complex, 2 to 8 percent slopes; McKinley County, New Mexico; Cerro Parido Quadrangle; latitude 35 degrees, 33 minutes, 08 seconds and longitude 107 degrees, 19 minutes, 59 seconds.

The surface is covered by about 30 percent gravel and 20 percent cobbles.

A—0 to 2 inches; brown (7.5YR 5/2) very cobbly loam, dark brown (7.5YR 3/2) moist; moderate thin and medium platy; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine vesicular pores; 30 percent gravel and 20 percent cobbles; slightly acid (pH 6.2); clear smooth boundary.

Bt1—2 to 6 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure, hard, firm, sticky and plastic; common very fine, fine, and few medium roots; common fine tubular pores; many prominent clay films on faces of peds; slightly acid (pH 6.4); clear smooth boundary.

Bt2—6 to 14 inches; reddish brown (5YR 4/3) clay, dark reddish brown (5YR 3/3) moist; moderate fine and medium angular blocky structure; very hard, very firm, sticky and very plastic; common very fine, fine, and few medium roots; common fine tubular pores; many prominent clay films on ped faces; 10 percent gravel; neutral (pH 6.6); abrupt boundary.

Crk—14 to 17 inches; Weathered basalt with continuous calcium carbonate coating rock fragments.

R—17 inches; basalt bedrock.

## **Range in Characteristics**

Particle-size control section: 35 to 50 percent clay Depth to bedrock: 10 to 20 inches to basalt

Reaction: slightly acid to neutral

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 2 or 3 moist

Chroma: 2 or 3

Rock fragments: 5 to 50 percent gravel; 0 to 30 percent cobbles; 0 to 15 percent stones. All

fragments are basalt.

Bt horizon:

Hue: 2.5YR to 7.5YR

Value: 4 or 5 dry, 2 to 4 moist Chroma: 2 to 4 dry or moist Texture: clay or clay loam

Rock fragments: 5 to 10 percent basalt gravel

#### Calladito Series

Taxonomic class: Mixed, mesic Ustic Torripsamments

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Rapid

Geomorphic position: Dunes on valley sides, valley

floors, hills, and ridges

Parent material: Eolian material derived from

sandstone

Slope range: 1 to 8 percent Elevation: 6,300 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Calladito loamy fine sand, in an area of mapping unit 12, Calladito-Elias association, 1 to 6 percent slopes; McKinley County, New Mexico; Star Lake Quadrangle; 1,100 feet east and 650 feet south of the northwest corner of sec. 29, T. 20 N., R. 6 W.; latitude 35 degrees, 56 minutes, 28 seconds and longitude 107 degrees, 29 minutes, 45 seconds.

A—0 to 2 inches; dark yellowish brown (10YR 4/4) loamy fine sand, dark brown (10YR 3/3) moist; weak very fine granular structure; loose, very friable, nonsticky and nonplastic; few medium and common fine and very fine roots; many very fine

- irregular pores; slightly alkaline (pH 7.6); abrupt smooth boundary.
- C1—2 to 26 inches; dark yellowish brown (10YR 4/4) loamy fine sand, dark brown (10YR 3/3) moist; single grain; loose, very friable, nonplastic and nonplastic; few medium and common fine and very fine roots; many very fine irregular pores; moderately alkaline (pH 8.0); clear smooth boundary.
- C2—26 to 65 inches; yellowish brown (10YR 5/4) loamy fine sand, brown (10YR 4/3) moist; single grain; loose, very friable, nonsticky and nonplastic; few medium, fine and very fine roots; many very fine irregular pores; moderately alkaline (pH 7.8).

#### Range in Characteristics

Particle-size control section: 2 to 10 percent clay Some pedons are calcareous within 3 inches of the surface.

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry; 3 to 5 moist Chroma: 4 to 6 dry; 3 to 6 moist Reaction: neutral or slightly alkaline

C horizon:

Hue: 7.5YR or 10YR

Value: 4 to 6 dry; 3 to 6 moist Chroma: 4 to 6 dry; 3 to 6 moist

Texture: loamy fine sand or loamy sand Reaction: slightly to moderately alkaline Calcium carbonate equivalent: 0 to 1 percent

## **Canoneros Series**

Taxonomic class: Clayey, mixed, superactive, frigid

Lithic Argiustolls Depth class: Shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava plateaus and cinder cones Parent material: Slope alluvium over residuum derived

from basalt

Slope range: 2 to 6 percent Elevation: 7,800 to 9,000 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

#### Typical Pedon

Canoneros very cobbly loam, in an area of mapping unit 425, Montillo-Canoneros complex, 2 to 6 percent slopes; McKinley County, New Mexico; Marquez Quadrangle; latitude 35 degrees, 21 minutes, 38

seconds and longitude 107 degrees, 20 minutes, 46 seconds.

The surface is covered by 10 percent gravel, 25 percent cobbles, and 5 percent stones.

A—0 to 2 inches; reddish brown (5YR 4/3) very cobbly loam, dark reddish brown (5YR 3/3) moist; moderate medium platy structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots, few fine irregular pores; 10 percent gravel, 25 percent cobbles, 5 percent stones; slightly acid (pH 6.4); abrupt smooth boundary.

Bt1—2 to 8 inches; dark reddish brown (5YR 3/3) clay loam, dark reddish brown (5YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; many very fine and fine roots; common fine irregular pores; common prominent clay films on faces of peds; 8 percent gravel and 2 percent cobbles; neutral (pH 6.8); clear smooth boundary.

Bt2—8 to 13 inches; dark reddish brown (5YR 3/2) clay, very dusky red (2.5YR 2.5/2) moist; strong very fine and fine angular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; many prominent clay films on faces of peds; 10 percent gravel and 2 percent cobbles with many soft weathered basalt fragments; neutral (pH 6.8); abrupt irregular boundary.

2R—13 inches; basalt bedrock.

#### Range in Characteristics

Particle-size control section: 35 to 50 percent clay with less than 35 percent rock fragments.

Depth to lithic contact: 10 to 20 inches to basalt Mollic epipedon thickness: 10 to 20 inches

Reaction: slightly acid in the surface and neutral in the

subsoil
A horizon:

Hue: 5YR or 7.5YR Value: 4 or 5 dry

Chroma: 3 or 4 dry, 2 or 3 moist

Rock fragments: 15 to 50 percent total range; 5 to 15 percent gravel; 0 to 25 percent cobbles; 0 to 5 percent stones. Mostly basalt with some cinders.

Bt horizon:

Hue: 2.5YR, 5YR, or 7.5YR Value: 3 or 4 dry, 2.5 or 3 moist

Chroma: 2 or 3

Texture: clay loam or clay

Rock fragments: 0 to 10 percent total range; 0 to 10

percent gravel; 0 to 5 percent cobbles. Mostly basalt with some cinders.

## **Casamero Series**

Taxonomic class: Clayey, smectitic, mesic, shallow

Leptic Haplotorrerts

Depth class: Shallow

Drainage class: Well drained

Permeability: Very slow

Geomorphic position: Valley sides and hills

Parent material: Slope alluvium over residuum derived

from shale

Slope range: 2 to 10 percent *Elevation:* 7,000 to 7,800 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Casamero clay, in an area of mapping unit 380, Berryhill-Casamero clays, 2 to 10 percent slopes; McKinley County, New Mexico; Goat Mountain Quadrangle; 2,100 feet north and 1,600 feet west of the southeast corner of sec. 3, T. 14 N., R. 11 W.; latitude 35 degrees, 28 minutes, 11 seconds and longitude 107 degrees, 59 minutes, 12 seconds (fig. 16).

A—0 to 3 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; moderate medium granular structure; soft, friable, very sticky and plastic; many very fine and fine and few medium roots; few fine vesicular and common very fine irregular pores; few cracks 0.5 inch wide; 10 percent sandstone and shale gravel and channers less than 3 inches in diameter; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bss—3 to 11 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; moderate coarse subangular blocky structure; very hard, very firm, sticky and very plastic; common very fine and few medium roots; few very fine irregular pores; many pressure faces and slickensides; few cracks 0.5 inch wide extending to 14 inches; few soft shale fragments 1 millimeter in diameter; violently effervescent; moderately alkaline (pH 8.2); clear irregular boundary.

Bssyz—11 to 18 inches; olive brown (2.5Y 4/4) clay, olive brown (2.5Y 4/4) moist; weak coarse subangular blocky structure; very hard, very firm, sticky and very plastic; few very fine roots; few very fine irregular pores; few pressure faces and

slickensides; many fine, soft shale fragments; 30 percent by volume clusters of gypsum and sodium sulfate crystals; 4 percent gypsum; EC of 4 mmhos/cm; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Cr—18 inches; weathered gypsiferous shale.

## **Range in Characteristics**

Particle-size control section: 50 to 70 percent clay Depth to paralithic contact: 10 to 20 inches to shale Depth to gypsum and sodium sulfate accumulations: 6 to 14 inches

Calcium carbonate equivalent: 1 to 10 percent
Vertic properties: gilgai microrelief ranges up to 2
inches; vertical cracks 0.5 inches wide extend
from surface to the paralithic contact; few to many
pressure faces and intersecting slickensides occur
from just below surface to the paralithic contact.

Reaction: slightly through strongly alkaline

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry, 4 or 5 moist

Rock fragments: 0 to 25 percent sandstone and shale

gravel and gravel-sized channers Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 0 to 2
Bss and Bssyz horizons:

Hue: 10YR or 2.5Y Value: 3 or 4 moist Chroma: 2 to 4 moist

Percent clay: 50 to 70 percent Percent gypsum:1 to 5 percent Salinity: EC of 2 to 8 mmhos/cm

Sodicity: SAR of 2 to 5

### **Celavar Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Moderately deep Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas and Cuestas

Parent material: Eolian material and slope alluvium over residuum derived from sandstone and shale

Slope range: 1 to 8 percent Elevation: 6,500 to 8,100 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 115 to 135 days

## **Typical Pedon**

Celavar sandy loam, in an area of mapping unit 368, Simitarq-Celavar sandy loams, 2 to 8 percent slopes; McKinley County, New Mexico; Continental Divide Quadrangle; 200 feet south and 200 feet east of the northwest corner of sec. 28, T. 14 N., R. 14 W.; latitude 35 degrees, 25 minutes, 21 seconds and longitude 108 degrees, 19 minutes, 58 seconds.

- Oi—0 to 1 inches; pinyon and oneseed juniper leaves, needles, twigs, and cones.
- A—1 to 2 inches; brown (10YR 4/3) sandy loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine, fine, and few medium roots; common fine vesicular pores; 1 percent gravel; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bt—2 to 11 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine, fine, and few medium and coarse roots; few fine irregular pores; many distinct clay films bridging sand grains; slightly alkaline (pH 7.6); clear smooth boundary.
- Btk1—11 to 27 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and few medium roots; common fine tubular pores; many prominent clay films on faces of peds and bridging sand grains; slightly effervescent; few fine and medium filaments of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.
- Btk2—27 to 31 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common fine tubular pores; many prominent clay films on faces of peds and bridging sand grains; 1 percent gravel; slightly effervescent; common fine and medium masses and common fine filaments of calcium carbonate; slightly alkaline (pH 7.8); abrupt smooth boundary.

R—31 inches; sandstone.

#### Range in Characteristics

Particle-size control section: 20 to 35 percent clay Depth to lithic contact: 20 to 40 inches to hard sandstone

Reaction: slightly alkaline throughout

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry; 3 or 4 moist Chroma: 3 or 4 dry; 3 to 6 moist

Rock fragments: 0 to 2 percent sandstone gravel

Bt horizon:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry; 3 or 4 moist

Chroma: 4 to 6

Texture: sandy clay loam or clay loam

Rock fragments: 0 to 1 percent sandstone gravel

Btk horizon:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry; 3 or 4 moist

Chroma: 4 to 6

Texture: sandy clay loam or clay loam

Rock fragments: 0 to 1 percent sandstone gravel Calcium carbonate equivalent: 1 to 5 percent

# **Chipeta Series**

Taxonomic class: Clayey, mixed, active, calcareous,

mesic, shallow Typic Torriorthents Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Slope alluvium and colluvium over

residuum derived from shale

Slope range: 5 to 30 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

### **Typical Pedon**

Chipeta silty clay, in an area of mapping unit 118, Farb-Chipeta-Rock outcrop complex, 2 to 30 percent slopes; McKinley County, New Mexico; Seven Lakes NW Quadrangle; 800 feet west and 400 feet north of the southeast corner of sec. 7, T. 19 N., R. 10 W.; latitude 35 degrees, 53 minutes, 06 seconds and longitude 107 degrees, 56 minutes, 02 seconds.

A—0 to 2 inches; light olive brown (2.5Y 5/4) silty clay, olive brown (2.5Y 4/4) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; few very fine roots; many very fine irregular pores; 5 percent gravel and 5 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Cyz—2 to 12 inches; light olive brown (2.5Y 5/4) silty

clay, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few fine and common very fine roots; many very fine irregular pores; 5 percent gravel; common soft shale fragments; few very fine gypsum and sodium sulfate crystals; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

Cr—12 inches; variegated gypsiferous shale.

#### Range in Characteristics

Particle-size control section: 35 to 50 percent clay Depth to paralithic contact: 5 to 20 inches to shale Calcium carbonate equivalent: 0 than 10 percent

Percent gypsum: 1 to 5 percent

A horizon:

Hue: 10YR or 2.5Y Value: 4 or 5 moist Chroma: 3 or 4 moist

Rock fragments: 0 to 30 percent gravel; 0 to 5 percent cobbles; 0 to 5 percent stones. All fragments are

siderite and sandstone.

Salinity: EC of 8 to 16 mmhos/cm

Sodicity: SAR 5 to 10

Reaction: slightly or moderately alkaline

Byz horizon: Hue: 10YR or 2.5Y Value: 3 or 4 moist Chroma: 3 or 4 moist

Texture: silty clay, clay or clay loam

Rock fragments: 0 to 10 percent sandstone and

siderite gravel

Salinity: EC of 8 to 16 mmhos/cm

Sodicity: SAR 5 to 15

Reaction: moderately or strongly alkaline

#### **Chivato Series**

Taxonomic class: Fine, mixed, active, frigid Typic

Haplusterts

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Geomorphic position: Playas on lava plateaus Parent material: Lacustrine material derived from

basalt

Slope range: 0 to 1 percent Elevation: 8,100 to 8,600 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

or mod pomounds to the days

# **Typical Pedon**

Chivato clay, in an area of mapping unit 440, Chivato

clay, 0 to 1 percent slopes; McKinley County, New Mexico; Marquez Quadrangle; latitude 35 degrees, 22 minutes, 09 seconds and longitude 107 degrees, 19 minutes, 59 seconds.

A—0 to 2 inches; gray (5Y 5/1) clay, very dark gray (5Y 3/1) moist; moderate medium platy structure parting to moderate very fine and fine granular; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine irregular pores; few (<1 percent) cobble- and stone-sized volcanic bombs occur on the surface; slightly acid (pH 6.4); abrupt smooth boundary.

Bss1—2 to 13 inches; dark gray (5Y 5/1) clay, very dark gray (5Y 3/1) moist; weak medium and coarse angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; few very fine irregular pores; many pressure faces; few slickensides; neutral (pH 6.6); clear smooth boundary.

Bss2—13 to 40 inches; dark gray (5Y 5/1) clay, very dark gray (5Y 3/1) moist; massive; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; few very fine irregular pores; many pressure faces; many slickensides; neutral (pH 7.2); clear smooth boundary.

Bss3—40 to 52 inches; gray (5Y 5/1) clay, very dark gray (5Y 3/1) moist; few fine distinct reddish yellow (7.5YR 6/8) moist redox concentrations; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few very fine irregular pores; many pressure faces; few slickensides; slightly alkaline (pH 7.4); gradual wavy boundary.

Bssg—52 to 65 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; common fine distinct reddish yellow (7.5YR 6/8) moist redox concentrations and dark gray (10YR 4/1) moist redox depletions; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few very fine irregular pores; many pressure faces; few slickensides; slightly alkaline (pH 7.4).

### Range in Characteristics

Particle-size control section: 60 to 80 percent clay Vertic Properties: gilgai microrelief ranges up to 6 inches; vertical cracks 0.5 inch in width range from the surface to 30 inches or more in depth; many pressure faces and few to common slickensides from 2 to 30 inches in depth.

A horizon:

Hue: 10YR, 2.5Y, or 5Y

Value: 4 or 5 dry

Reaction: slightly acid or neutral

B horizons:

Hue: 10YR, 2.5Y, or 5Y Value: 4 to 6 dry; 3 to 5 moist

Chroma: 1 or 2

Redoximorphic features:

Redox concentrations Redox depletions

Depth: 3 to 40 inches 20 to 50 inches

Quantity: few to many few to many

Size: fine and medium fine and medium

Contrast: distinct or prominent distinct

 Hue:
 2.5YR to 10YR
 7.5YR, 10YR, 2.5Y

 Value:
 3 to 6 moist
 3 or 4 moist

 Chroma:
 3 to 8 moist
 0 to 2 moist

Reaction: neutral or slightly alkaline

#### Chunkmonk Series

Taxonomic class: Loamy-skeletal, mixed, superactive,

mesic Lithic Haplustalfs

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderate Geomorphic position: Cuestas

Parent material: Eolian material and slope alluvium over residuum derived from sandstone and

limestone

Slope range: 2 to 10 percent Elevation: 7,000 to 7,700 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Chunkmonk very gravelly fine sandy loam, in an area of mapping unit 367, Chunkmonk very gravelly fine sandy loam, 2 to 10 percent slopes; McKinley County, New Mexico; about 2 miles northeast of the village of Upper Nutria; Upper Nutria Quadrangle; 700 feet north and 2,300 feet east of the southwest corner of sec. 5, T. 12 N., R. 16 W.; latitude 35 degrees, 17 minutes, 32 seconds and longitude 108 degrees, 32 minutes, 52 seconds.

The surface is covered by 45 percent gravel and 5 percent cobbles. Fragments are dolomitic limestone and calcareous sandstone.

A—0 to 1 inches; brown (7.5YR 4/3) very gravelly fine sandy loam, dark brown (7.5YR 3/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 45 percent gravel, 5 percent cobbles; slightly effervescent; few very fine and fine masses of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.

Btk1—1 to 4 inches; brown (5YR 4/3) very cobbly loam, dark reddish brown (5YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few faint clay films bridging sand grains; 15 percent gravel, 45 percent cobbles; strongly effervescent; common fine and medium masses of calcium carbonate; 5 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear wavy boundary.

Btk2—4 to 8 inches; reddish brown (5YR 4/3) gravelly loam, dark reddish brown (5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots: few faint clay films bridging sand grains; 20 percent gravel, 5 percent cobbles; violently effervescent; common fine and medium masses and few fine concretions of calcium carbonate; 28 percent calcium carbonate equivalent; moderately alkaline (8.2); abrupt wavy boundary.

Btk3—8 to 10 inches; reddish brown (5YR 5/4) gravelly loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine, and coarse roots: few distinct clay films bridging sand grains; 20 percent gravel, 5 percent cobbles; violently effervescent; many fine and medium masses and few fine and medium concretions of calcium carbonate; 38 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt wavy boundary.

R—10 inches; San Andreas limestone.

# **Range in Characteristics**

Particle-size control section: 10 to 25 percent clay Depth to lithic contact: 8 to 20 inches to dolomitic limestone

Depth to calcic: 2 to 14 inches

Reaction: slightly to moderately alkaline throughout

A horizon:

Hue: 5YR or 7.5YR

Value: 3 dry, or 4 moist

Chroma: 3 or 4

Rock fragments: 25 to 60 percent total; 15 to 50 percent gravel, 0 to 20 percent cobbles, 0 to 1 percent stones. All fragments are limestone and sandstone.

Calcium carbonate equivalent: 0 to 5 percent

Btk horizon:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4

Textures: loam or clay loam.

Rock fragments: 35 to 60 percent total; 15 to 25 percent gravel, 20 to 50 percent cobbles. All fragments are limestone and sandstone.

Calcium carbonate equivalent: 5 to 15 in the upper part

and 15 to 40 percent in the lower part

### Cinnadale Series

Taxonomic class: Loamy-skeletal, mixed, superactive,

frigid Lithic Haplustepts

Depth class: Shallow

Drainage class: Well drained Permeability: Moderately rapid

Geomorphic position: Cuestas, hogbacks, hills, and

Parent material: Slope alluvium over residuum derived

from sandstone

Slope range: 5 to 15 percent *Elevation:* 7,200 to 8,200 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

### **Typical Pedon**

Cinnadale very channery fine sandy loam, in an area of mapping unit 407, Cinnadale-Heckly association, 5 to 40 percent slopes; McKinley County, New Mexico; Page Quadrangle; 1,500 feet west and 350 feet south of the northeast corner of sec. 13, T. 13 N., R. 16 W.; latitude 35 degrees, 21 minutes, 45 seconds and longitude 108 degrees, 28 minutes, 49 seconds.

The surface is covered by 40 percent channers, 5 percent flagstones.

A—0 to 2 inches; brown (7.5YR 5/3) very channery fine sandy loam, dark brown (7.5YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and few medium roots; 40 percent channers, 5 percent flagstones; neutral (pH 7.0); abrupt smooth boundary.

Bw1—2 to 9 inches; light reddish brown (5YR 6/4) very channery fine sandy loam, reddish brown (5YR 5/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; 40 percent channers, 15 percent flagstones; neutral (pH 7.0); clear wavy boundary.

Bw2—9 to 15 inches; light reddish brown (5YR 6/4) very channery fine sandy loam, reddish brown (5YR 5/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; 40 percent channers, 15 percent flagstones; neutral (pH 7.0); abrupt wavy boundary.

R—15 inches; Abo sandstone.

#### Range in Characteristics

Particle-size control section: 10 to 15 percent clay

Depth to lithic contact: 10 to 20 inches Reaction: neutral to slightly alkaline

A horizon:

Hue: 5YR and 7.5YR Value: 5 or 6 dry, 3 moist Chroma: 2 or 3 dry and moist Textures: fine sandy loam or loam

Rock fragments: 15 to 55 percent total; 15 to 45 percent channers and 5 to 10 percent flagstones. All rock fragments are sandstone.

Bw horizon:

Hue: 5YR or 7.5YR Value: 4 or 5 moist

Chroma: 2 to 4 dry and moist Textures: fine sandy loam or loam

Rock fragments: 35 to 60 percent total; 30 to 50 percent channers and 5 to 15 percent flagstones. All rock fragments are sandstone.

### Concho Series

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Argiustolls Depth class: Very Deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors and drainageways Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 0 to 3 percent Elevation: 6,600 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Concho clay loam, in an area of mapping unit 360, Hosta-Concho association, 0 to 5 percent slopes; McKinley County, New Mexico; Burned Timber Canyon Quadrangle; 200 feet north and 1,200 feet east of the southwest corner of sec. 29, T. 11 N., R. 16 W.; latitude 35 degrees, 08 minutes, 54 seconds and longitude 108 degrees, 33 minutes, 09 seconds.

Ap1—0 to 1 inches; brown (10YR 5/3), clay loam, very dark grayish brown (10YR 3/2) moist; strong thin platy structure parting to moderate fine granular; soft, very friable, sticky and plastic; many very fine and fine roots; many fine irregular and few fine vesicular pores; neutral; clear smooth boundary.

Ap2—1 to 5 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and very plastic; many very fine and fine roots; many fine irregular pores; many prominent clay films coating faces of peds; neutral; clear smooth boundary.

Btss1—5 to 18 inches; yellowish brown (10YR 5/4) clay, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to strong medium subangular blocky; very hard, very firm, sticky and very plastic; common very fine and fine roots; common fine irregular pores; many prominent clay films coating faces of peds; few slickensides; slightly effervescent; slightly alkaline; gradual wavy boundary.

Btss2—18 to 32 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; weak very coarse subangular blocky structure; extremely hard, extremely firm; sticky and very plastic; few very fine and fine roots; common fine irregular pores; many prominent clay films coating faces of peds; many slickensides; very slightly effervescent; moderately alkaline; gradual irregular boundary.

Btkss—32 to 51 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; extremely hard, extremely firm; sticky and very plastic; few very fine and fine roots; common fine irregular pores; many prominent clay films coating faces of peds; many slickensides; common fine irregular masses of calcium carbonate; slightly effervescent; slightly alkaline; clear irregular boundary.

Btkz—51 to 65 inches; dark brown (10YR 4/3) clay; dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; extremely hard, extremely firm; sticky and very plastic; few very fine and fine roots; common fine irregular pores; common prominent clay films coating faces of peds; common fine clusters of salt crystals; few

fine irregular masses of calcium carbonate; slightly effervescent; slightly alkaline.

# Range in Characteristics

Particle-size control section: 35 to 55 percent clay Slickensides: (when present) occur from 5 to 50 inches Cracks: 3 to 7 mm wide at 20 inches below the surface.

Salt accumulations: (when present) occur below 45 inches. Electrical conductivity ranges from 0 to 4 mmhos/cm.

Depth to calcium carbonate: 10 to 30 inches

A horizon:

Hue: 10YR or 2.5Y Chroma: 2 or 3 moist

Rock fragments: 0 to 5 percent sandstone gravel

Reaction: neutral or slightly alkaline

Bt horizons:

Hue: 7.5YR, 10YR or 2.5Y Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry, 2 to 4 moist Texture: clay or clay loam

Reaction: neutral or slightly alkaline

Btk or Bk horizons: Hue: 10YR or 2.5Y

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry, 2 or 3 moist Texture: clay loam or clay

Reaction: slightly or moderately alkaline Calcium carbonate equivalent: 1 to 5 percent

**Conchovar Series** 

Taxonomic class: Fine, mixed, superactive, mesic

Pachic Argiustolls Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Very slow

Geomorphic position: Valley floors and drainageways Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 0 to 1 percent Elevation: 6,600 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Conchovar clay loam, in an area of mapping unit 47, Conchovar clay loam, 0 to 1 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 2,300 feet east and 100 feet north of the south west corner of sec. 12, T. 10 N., R. 17 W.; latitude 35 degrees, 6 minutes, 26 seconds and longitude 108 degrees, 35 minutes, 3 seconds.

- Ap1—0 to 3 inches; grayish brown (2.5Y 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong very fine and fine subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots; many fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Ap2—3 to 9 inches; grayish brown (10YR 5/2) clay, dark brown (10YR 3/3) moist; strong fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; common fine irregular pores; many prominent clay films on faces of peds; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Btz—9 to 26 inches; gray (10YR 5/1) clay, dark brown (10YR 3/2) moist; many fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots; few fine irregular pores; many prominent clay films on faces of peds; few vertical cracks 5 mm wide extend from 8 to 18 inches; common fine clusters of salt crystals; strongly effervescent; moderate alkaline (pH 8.2); gradual irregular boundary.
- BCz—26 to 36 inches; gray (10YR 5/1) clay, dark gray (10YR 4/1) moist; massive; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; common fine clusters of salt crystals; common pressure faces; slightly effervescent; many medium prominent (5YR 4/6) redox concentrations; moderately alkaline (pH 8.4); clear smooth boundary.
- Cg—36 to 54 inches; gray (10YR 5/1) clay, dark gray (10YR 4/0) moist; massive; extremely hard, extremely firm, very sticky and very plastic; slightly effervescent; common medium and coarse prominent yellowish brown (10YR 5/6) redox concentrations; moderately alkaline (pH 8.4); abrupt smooth boundary.
- 2C—54 to 65 inches; mixed reddish brown (5YR 4/4), dark gray (10YR 4/1), and red (2.5YR 4/8) sandy clay; massive; very hard, very firm, very sticky and very plastic; water table occurs at 54 inches; non-effervescent; gray colors are redox depletions and reddish brown and red colors are redox concentrations; slightly alkaline (pH 7.8).

# **Range in Characteristics**

Particle-size control section: 35 to 55 percent clay Depth to water table: 30 to 60 inches.

Depth to redoximorphic features: 20 to 40 inches Depth to salt accumulations: 10 to 40 inches Reaction: slightly to moderately alkaline throughout Calcium carbonate equivalent: 0 to 1 percent

A horizon:

Hue: 10YR or 2.5Y

Value: 3 to 5 dry, 3 or 4 moist

Chroma: 2 or 3

Salinity: EC of 1 to 4 mmhos/cm

Sodicity: SAR of 0 to 5

Bt horizon:

Value: 3 to 5 dry, 3 or 4 moist

Chroma: 2 or 3

Texture: clay or clay loam Salinity: EC of 4 to 8 mmhos/cm

Sodicity: SAR of 0 to 5

BCz horizon: *Hue:* 10YR

Value: 3 to 6 dry, 3 to 5 moist

Chroma: 2 to 6

Salinity: EC of 4 to 8 mmhos/cm

Sodicity: SAR of 0 to 5

Redoximorphic features: few to common, medium to coarse, distinct to prominent, 5YR redox

concentrations

C horizon:

Hue: 10YR or 2.5Y

Value: 3 to 6 dry, 2 to 5 moist

Chroma: 2 to 8

Texture: sandy clay loam, clay loam, sandy clay, or

clay

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 0 to 5

Redoximorphic features: few, medium to coarse, distinct to prominent, 2.5YR redox concentrations

and redox depletions

#### Corzuni Series

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Typic Haplustalfs Depth class: Very Deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Cuestas and valley sides Parent material: Eolian material and fan alluvium

derived from sandstone Slope range: 2 to 10 percent Elevation: 7,000 to 7,500 feet

Mean annual air temperature: 45 to 48 degrees F Mean annual precipitation: 16 to 20 inches Frost-free period: 90 to 110 days

### **Typical Pedon**

Corzuni loamy fine sand, in an area of mapping unit 414, Zunalei-Corzuni loamy fine sands, 2 to 10 percent slopes; McKinley County, New Mexico; Ramah Quadrangle; about 2,050 feet north and 2,500 feet west of the southeast corner of sec. 11, T. 11 N., R. 16 W.; latitude 35 degrees, 11 minutes, 50 seconds and longitude 108 degrees, 29 minutes, 40 seconds.

Oi—0 to 1 inches; slightly decomposed pine needles and grasses.

A—1 to 8 inches; brown (7.5YR 5/2) loamy fine sand, dark brown (7.5YR 3/2) moist; single grain structure; loose, loose, nonsticky and nonplastic; many very fine and fine roots; neutral (pH 7.0); abrupt smooth boundary.

Bt1—8 to 29 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine irregular pores; few distinct clay films on faces of peds and bridging sand grains; neutral (pH 7.2); clear smooth boundary.

Bt2—29 to 45 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak very fine and fine subangular block structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few distinct clay films on faces of peds and bridging sand grains; neutral (pH 7.2); abrupt smooth boundary.

Bk—45 to 70 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; very slightly effervescent; few very fine calcium carbonate masses; slightly alkaline (pH 7.8).

### Range in Characteristics

Particle-size control section: 8 to 18 percent clay

A horizon: Hue: 7.5YR

Value: 5 dry, 3 moist

Chroma: 2

Texture: loamy fine sand or loamy sand Reaction: Neutral to slightly alkaline

Bt horizon: Hue: 7.5YR

Value: 5 dry, 3 or 4 moist Chroma: 4 or 6 dry, 3 to 6 moist

Texture: fine sandy loam

Reaction: Neutral to slightly alkaline

Bk horizon:

Hue: 5YR or 7.5YR Value: 5 dry, 4 moist

Chroma: 6

Textures: fine sandy loam, sandy clay loam, silty clay

loam, or silty clay

Reaction: slightly to moderately alkaline Calcium carbonate equivalent: 1 to 5 percent

### **Councelor Series**

*Taxonomic class:* Coarse-loamy, mixed, superactive, calcareous, mesic Ustic Torriorthents

Depth class: Very deep

Drainage class: Somewhat excessive and well drained Permeability: Moderately rapid to moderately slow Geomorphic position: Valley sides and valley floors Parent material: Eolian material and fan and stream alluvium derived from sandstone and shale

Slope range: 1 to 10 percent Elevation: 6,300 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Councelor fine sandy loam, in an area of mapping unit 10, Tsosie-Councelor-Blancot fine sandy loams, 1 to 3 percent slopes; McKinley County, New Mexico; Ojo Encino Mesa Quadrangle; 1,400 feet west and 400 feet south of the northeast corner of sec. 23, T. 20 N., R. 5 W.; latitude 35 degrees, 57 minutes, 19 seconds and longitude 107 degrees, 19 minutes, 49 seconds.

- A—0 to 2 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; few very fine irregular pores; slightly alkaline (pH 7.4); abrupt smooth boundary.
- C1—2 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; few fine and very fine irregular pores; slightly alkaline (pH 7.6); clear smooth boundary.
- C2—8 to 20 inches; yellowish brown (10YR 5/4) fine sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few very fine irregular pores; slightly alkaline (pH 7.6); clear smooth boundary.

C3—20 to 35 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; slightly alkaline (pH 7.8); abrupt smooth boundary.

- C4—35 to 47 inches; brown (10YR 5/3) sandy loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.
- C5—47 to 65 inches; pale brown (10YR 6/3) silt loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; slightly effervescent; moderately alkaline (pH 8.2).

### **Range in Characteristics**

Particle-size control section: 8 to 18 percent clay Reaction: Slightly alkaline or moderately alkaline Calcium carbonate equivalent: 1 to 10 percent

A horizon: Hue: 10YR

Value: 3 or 4 moist

Chroma: 3 or 4 dry and moist

C horizon:

Hue: 10YR or 2.5Y

Value: 4 to 6 dry; 3 to 5 moist Chroma: 3 or 4 dry; 2 to 6 moist

Texture: fine sandy loam, sandy loam, loamy fine sand, loamy sand, silty clay loam, or silt loam

### **Doak Series**

Taxonomic class: Fine-loamy, mixed, active, mesic

Typic Haplargids
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate

Geomorphic position: Mesas, cuestas, and valley

sides

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope range: 1 to 5 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

### **Typical Pedon**

Doak fine sandy loam, in an area of mapping unit 120, Doak-Shiprock complex, 1 to 8 percent slopes; McKinley County, New Mexico; Seven Lakes NW Quadrangle; 800 feet north and 400 feet west of the southeast corner sec. 24, T. 20 N., R. 11W; latitude 35 degrees, 56 minutes, 40 seconds and longitude 107 degrees, 56 minutes, 56 seconds.

- A—0 to 2 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; slightly effervescent; slightly alkaline; (pH 7.6); abrupt smooth boundary.
- Bt—2 to 8 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Btk—8 to 12 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly effervescent; few fine irregular seams and filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk1—12 to 40 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; few very fine and fine irregular pores; violently effervescent; few fine irregular seams and filaments of calcium carbonate; moderately alkaline (pH 8.2); gradual smooth boundary.
- Bk2—40 to 65 inches; brownish yellow (10YR 6/6) sandy clay loam, yellowish brown (10YR 5/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; few very fine and fine irregular pores; violently effervescent; few fine irregular seams and filaments of calcium carbonate; moderately alkaline (pH 8.4).

# **Range in Characteristics**

Particle-size control section: 18 to 35 percent clay Reaction: neutral to slightly alkaline in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Hue: 10YR or 7.5YR

Value: 4 to 6 dry and 3 to 5 moist Chroma: 2 to 4 dry and moist

Textures: fine sandy loam, loam, or clay loam

Bt horizon:

Hue: 10YR to 5YR

Value: 5 to 6 dry and 4 to 6 moist Chroma: 3 to 6 dry and moist

Textures: loam, sandy loam, clay loam, or silty clay

loam

Btk or Bk horizons: Hue: 10YR to 5YR

Value: 5 to 8 dry and 4 to 6 moist Chroma: 3 to 6 dry and moist

Textures: loam, sandy loam, clay loam, or silty clay

loam

Calcium carbonate equivalent: 1 to 10 percent

Some pedons have C horizons that are stratified below 40 inches.

### **Doakum Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids Depth class: Very deep Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas, cuestas, valley sides,

hills, and ridges

Parent material: Eolian material and fan and slope alluvium derived from sandstone and shale

Slope range: 1 to 5 percent Elevation: 6,400 to 6,900 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Doakum fine sandy loam, in an area of mapping unit 11, Doakum-Betonnie complex, 1 to 8 percent slopes; McKinley County, New Mexico; Ojo Encino Mesa Quadrangle; 1,200 feet south and 1,400 feet east of the northeast corner of sec. 22, T. 20 N., R. 5 W.; latitude 35 degrees, 57 minutes, 10 seconds and longitude 107 degrees, 21 minutes, 24 seconds (fig. 17).

- A—0 to 2 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; many very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt1—2 to 8 inches; brown (7.5YR 5/4) sandy clay loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few medium

and many fine and very fine roots; common fine tubular pores; common faint clay films bridging sand grains; neutral (pH 7.2); clear smooth boundary.

- Bt2—8 to 13 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and nonplastic; few medium and common fine and very fine roots; common fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline (pH 7.4); clear smooth boundary.
- Bt3—13 to 21 inches; strong brown (7.5YR 5/6) sandy clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and nonplastic; few coarse and medium and common fine and very fine roots; common fine tubular pores; few distinct clay films on faces of peds and lining pores; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Bk1—21 to 42 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few fine and very fine roots; common fine tubular pores; strongly effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk2—42 to 65 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/6) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; strongly effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6).

### Range in Characteristics

Particle-size control section: 18 to 35 percent clay

A horizon:

Hue: 7.5YR or 10YR Value: 4 or 5 moist Chroma: 3 or 4 moist

Reaction: neutral or slightly alkaline

Bt horizon:

Hue: 7.5YR or 10YR Value: 3 to 5 moist

Chroma: 4 to 6 dry; 3 to 6 moist Texture: sandy clay loam or clay loam Reaction: neutral to moderately alkaline

Bk horizon:

Hue: 7.5YR or 10YR

Value: 4 to 7 dry; 4 to 6 moist Chroma: 4 to 6 dry and moist

Texture: sandy clay loam or sandy loam Reaction: slightly to moderately alkaline Calcium carbonate equivalent: 1 to 5 percent

# **Eagleye Series**

Taxonomic class: Clayey, mixed, active, nonacid, mesic, shallow Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Slope alluvium over residuum derived

from shale

Slope range: 5 to 60 percent Elevation: 6,500 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

### **Typical Pedon**

Eagleye gravelly clay loam, in an area of mapping unit 258, Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes; McKinley County, New Mexico; Hunter's Point Quadrangle; about 1,600 feet west and 800 feet south of the northeast corner of sec. 23, T. 16 N., R. 21 W.; latitude 35 degrees, 36 minutes, 49 seconds and longitude 109 degrees, 02 minutes, 46 seconds.

- A—0 to 2 inches; light olive brown (2.5Y 5/3) gravelly clay loam, olive brown (2.5Y 4/3) moist; strong very fine granular structure; slightly hard, firm, sticky and plastic; common very fine roots; 16 percent gravel; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Cy—2 to 10 inches; light olive brown (2.5Y 5/3) clay, olive brown (2.5Y 4/3) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few very fine irregular pores; 5 percent gravel and 10 to 20 percent soft shale fragments; few very fine masses gypsum; slightly alkaline (pH 7.8); clear smooth boundary.
- Cr—10 inches; gray fractured shale.

#### Range in Characteristics

Particle-size control section: 35 to 50 percent clay Depth to paralithic contact: 6 to 20 inches to shale Percent gypsum: 0 to 2 percent in the surface and 1 to

5 percent in the lower horizons

Reaction: Slightly alkaline

A horizon: *Hue:* 2.5Y

Value: 4 or 5 dry and moist Chroma: 3 to 6 dry and moist

Rock fragments: 0 to 30 percent channers. All

fragments are sandstone. Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR 0 to 2

By horizon: Hue: 2.5Y

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist Texture: silty clay, clay, or clay loam

Texture. Silly clay, clay, or clay loam

Rock fragments: 0 to 10 percent sandstone gravel

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR 0 to 4

Other features: 10 to 20 percent soft shale fragments.

Fragments increase with depth.

#### **Eldado Series**

Taxonomic class: Fine-loamy over sandy or sandyskeletal, mixed, superactive, mesic Ustic

Calciargids

Depth class: Very deep Drainage class: Well drained Permeability: Moderate

Geomorphic position: Valley floors

Parent material: Eolian material and stream alluvium

derived from basalt and sandstone

Slope range: 1 to 5 percent Elevation: 6,300 to 7,300 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### **Typical Pedon**

Eldado gravelly fine sandy loam, in an area of mapping unit 275, Eldado gravelly fine sandy loam, 1 to 5 percent slopes; McKinley County, New Mexico; Mesa Cortada Quadrangle; 4,200 feet north and 1,800 feet east of the southwest corner of sec. 14, T. 15 N., R. 6 W.; latitude 35 degrees, 32 minutes, 00 seconds and longitude 107 degrees, 26 minutes, 38 seconds (fig. 18).

A—0 to 2 inches; brown (10YR 5/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure parting to weak fine granular structure: soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine irregular pores; 13 percent gravel, 1 percent cobbles, and 1

percent stones; slightly effervescent; neutral (pH 7.2); clear smooth boundary.

Btk1—2 to 9 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine irregular pores; many distinct clay films bridging sand grains and on ped faces; 5 percent gravel, 1 percent cobbles, and 1 percent stones; slightly effervescent; common very fine and fine masses of calcium carbonate and coating rock fragments; 6 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear wavy boundary.

Btk2—9 to 13 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; common distinct clay films bridging sand grains; 10 percent gravel and 2 percent cobbles; violently effervescent; 35 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk1—13 to 25 inches; light gray (10YR 7.2) sandy clay loam, pale brown (10YR 6/3) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 10 percent gravel and 1 percent cobbles; violently effervescent; 45 percent calcium carbonate equivalent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Bk2—25 to 43 inches; light brown (7.5YR 6/3) extremely gravelly loamy coarse sand, brown (7.5YR 5/3) moist; single grained; loose, loose, nonsticky and nonplastic; common very fine and fine roots; 55 percent gravel, 15 percent cobbles, and 5 percent stones; strongly effervescent; many very fine and fine masses of calcium carbonate and coating rock fragments; 5 percent calcium carbonate equivalent; strongly alkaline (pH 8.8); gradual wavy boundary.

2C—43 to 72 inches; light brown (7.5YR 6/3) extremely gravelly coarse sand, brown (7.5YR 5/3) moist; single grained; loose, loose, nonsticky and nonplastic; few very fine and fine roots; 60 percent gravel, 5 percent cobbles, and 1 percent stones; slightly alkaline (pH 7.6).

### **Range in Characteristics**

Particle-size control section: 20 to 35 percent clay and less than 35 percent rock fragments in the upper

part; and less than 10 percent clay and greater than 35 percent rock fragments in the lower part.

Depth to calcic horizon: 5 to 15 inches with 15 to 55 percent calcium carbonate equivalent

Depth to horizons with greater than 35 percent rock

fragments: 10 to 30 inches

Reaction: neutral to slightly alkaline in the surface and slightly to strongly alkaline

A horizon:

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4 dry

Texture: fine sandy loam or loam

Rock fragments: 10 to 40 percent total; 10 to 40 percent gravel; 0 to 1 percent cobbles; 0 to 1 percent stones. All fragments are basalt and sandstone.

Calcium carbonate equivalent: 1 to 5 percent

Bt or Btk horizons:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry, 3 to 5 moist Chroma: 3 or 4 dry or moist

Texture: sandy clay loam, loam, or clay loam

Rock fragments: 2 to 25 percent total; 2 to 20 percent gravel; 0 to 5 percent cobbles; 0 to 1 percent stones. All fragments are basalt and sandstone. Calcium carbonate equivalent: 5 to 35 percent

Bk horizon (when present):

Hue: 7.5YR or 10YR

Chroma: 2 to 4 dry or moist

Rock fragments: 5 to 20 percent total range; 5 to 20 percent gravel; 0 to 1 percent cobbles. All fragments are basalt and sandstone.

Calcium carbonate equivalent: 15 to 50 percent

2Bk horizons:

Hue: 7.5YR or 10YR

Value: 5 to 8 dry, 3 through 8 moist *Chroma:* 1 to 4 dry, 3 or 4 moist

Texture: sandy clay loam, coarse sandy loam, or

loamy coarse sand

Rock fragments: 35 to 90 percent total range; 35 to 70 percent gravel; 10 to 30 percent cobbles; 0 to 5 percent stones. All fragments are basalt and sandstone.

Calcium carbonate equivalent: 5 to 55 percent

C horizon (when present): Hue: 7.5YR, 10YR, or 2.5YR Chroma: 2 or 3 dry or moist Texture: sand or coarse sand

Rock fragments: 5 to 70 percent total range; 5 to 60 percent gravel; 0 to 5 percent cobbles; 0 to 1

percent stones. All fragments are basalt and sandstone.

Calcium carbonate equivalent: 0 to 5 percent

# **Elias Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Natrargids Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley sides

Parent material: Fan alluvium derived from sandstone

and shale

Slope range: 1 to 6 percent Elevation: 6,300 to 6,800

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

### **Typical Pedon**

Elias fine sandy loam, in an area of mapping unit 12, Calladito-Elias association, 1 to 6 percent slopes; McKinley County, New Mexico; Pueblo Alto Trading Post Quadrangle; 1,300 feet west and 300 feet south of the northeast corner of sec. 19, T. 19 N., R. 6 W.; latitude 35 degrees, 57 minutes, 24 seconds and longitude 107 degrees, 30 minutes, 43 seconds.

E—0 to 1 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, non-sticky and nonplastic; few very fine and fine roots; common very fine pores; 5 percent siderite gravel; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btn1—1 to 3 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; moderate fine prismatic; hard, friable, slightly sticky and nonplastic; few very fine and fine roots; common fine pores; common distinct clay films on faces of peds and lining pores; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary.

Btn2—3 to 10 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting moderate medium subangular blocky; hard, friable, slightly sticky and nonplastic; few very fine and fine roots; common fine pores; common distinct clay films on faces of peds and lining pores; 5 percent siderite gravel; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

- Bkn1—10 to 18 inches; light yellowish brown (10YR 6/4) loamy fine sand, light yellowish brown (10YR 6/4) moist; massive; hard, very friable, non-sticky and nonplastic; few very fine and fine roots; few very fine pores; slightly effervescent; few fine irregular masses of calcium carbonate; strongly alkaline (pH 8.6); clear smooth boundary.
- Bkn2—18 to 33 inches; light olive gray (5Y 6/2) sandy clay loam, olive gray (5Y 5/2) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common fine pores; slightly effervescent; few fine irregular masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.
- Bkn3—33 to 65 inches; pale olive (5Y 6/4) clay loam, olive (5Y 5/4) moist; massive; hard, firm, sticky and plastic; few fine pores; slightly effervescent; strongly alkaline (pH 8.8).

#### **Range in Characeristics**

Particle-size control section: 18 to 35 percent clay Depth to secondary calcium carbonate: 5 to 15 inches. Calcium carbonate equivalent: 5 to 15 percent

E horizon:

Value: 6 dry; 4 or 5 moist Chroma: 2 to 4 dry; 3 or 4 moist Texture: sandy clay loam or loam

Rock fragments: 0 to 10 percent siderite gravel Reaction: moderately to strongly alkaline

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 5 to 10

Btn horizon: Hue: 10YR to 5Y

Value: 4 to 6 dry; 3 to 5 moist

Chroma: 2 to 4

Texture: sandy clay loam, loam, or clay loam Rock fragments: 0 to 10 percent siderite gravel Reaction: strongly to very strongly alkaline

Salinity: EC of 0 to 4 mmhos Sodicity: SAR of 13 to 30

Bkn horizon: Hue: 10YR to 5Y Value: 4 to 6; Chroma: 2 to 4

Texture: loamy sand, very fine sandy loam, loam, loamy fine sand, sandy clay loam, or clay loam Rock fragments: 0 to 10 percent siderite gravel Reaction: moderately to very strongly alkaline

Salinity: EC of 0 to 4 mmhos Sodicity: SAR of 13 to 30

Some pedons have a C horizon below the Bkn horizon.

# **Escawetter Series**

Taxonomic class: Sandy, mixed, mesic Oxyaquic

Torrifluvents

Depth class: Very Deep

Drainage class: Moderately well drained

Permeability: Rapid to moderate

Geomorphic position: Flood plains on valley floors Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 1 percent Elevation: 5,500 to 6,900 feet

Mean annual air temperature: 46 to 55 degrees F Mean annual precipitation: 7 to 13 inches

Frost-free period: 100 to 150 days

#### **Typical Pedon**

Escawetter fine sand in an area of mapping unit 160, Escawetter-Riverwash-Razito, 0 to 5 percent slopes; Navajo Reservation; San Juan County, New Mexico; The Pillar 3 NE Quadrangle; Flood plains along the Chaco River; latitude 36 degrees, 10 minutes, 01 seconds and longitude 108 degrees, 16 minutes, 45 seconds.

- C1—0 to 1 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; weak thin platy structure and single grain; loose, nonsticky and nonplastic; moderately alkaline (pH 8.0); abrupt smooth boundary.
- C2—1 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; moderately alkaline (pH 8.0); abrupt wavy boundary.
- C3—7 to 16 inches; pale brown and light yellowish brown (10YR 6/3) and 2.5Y 6/3) laminated very fine sand and silt, brown and light olive brown (10YR 5/3) and (2.5Y 5/3) moist; massive; loose and soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.
- C4—16 to 22 inches; light yellowish brown (2.5Y 6/3) laminated very fine sands and silt, light olive brown (2.5Y 5/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; few very fine irregular pores; moderately alkaline (pH 8.0); abrupt wavy boundary.
- C5—22 to 52 inches; light yellowish brown (2.5Y 6/3) fine sand, light olive brown (2.5Y 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; moderately alkaline (pH 8.0); abrupt wavy boundary.

C6—52 to 70 inches; light yellowish brown (2.5Y 6/3) coarse sand, light olive brown (2.5Y 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; water saturated conditions at 52 inches; moderately alkaline (pH 8.0).

### Range in Characteristics

Particle-size control section: 2 to 10 percent clay Rock fragment content: 0 to 5 percent sandstone gravel

Depth to seasonal water table: 40 to 60 inches Calcium carbonate equivalent: 0 to 5 percent; some pedons are calcareous to the surface.

Redoximorphic features: none to many, fine to medium, and faint to distinct, dark yellowish brown, redox concentrations. Redox depletions are present below 40 inches and generally in finer textured horizons or strata.

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 0 to 5

Reaction: slightly to moderately alkaline

C horizons:

Hue: 10YR or 2.5Y.

Value: 5 to 7 dry, 4 to 6 moist.

Chroma: 2 to 4.

Texture: stratified coarse sand to silty clay; most horizons are dominantly fine sand, loamy fine sand, and sand, with laminations and thin strata of very fine sand, loamy very fine sand, silt loam and silty clay; individual horizons are laterally discontinuous and cross laminated.

### **Eslendo Series**

Taxonomic class: Loamy, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Hills and ridges

Parent material: Slope alluvium over residuum derived

from sandstone and shale Slope range: 2 to 25 percent Elevation: 6,300 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Eslendo loam, in an area of mapping unit 14, Councelor-Eslendo-Calladito complex, 2 to 25 percent slopes; McKinley County, New Mexico; Ojo Encino Mesa Quadrangle; 500 feet west and 200 feet north of the southeast corner of sec. 2, T. 20 N., R. 5 W.; latitude 35 degrees, 59 minutes, 09 seconds and longitude 107 degrees, 19 minutes, 40 seconds.

- A—0 to 2 inches; light olive brown (2.5Y 5/4) loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; common very fine irregular pores; slightly effervescent; neutral (pH 7.2); abrupt smooth boundary.
- C1—2 to 6 inches; light olive brown (2.5Y 5/6) silty clay loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few medium, fine and very fine roots; few very fine irregular pores; 2 percent gravel-sized angular shale fragments; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C2—6 to 11 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium, fine and very fine roots; few very fine irregular pores; 10 percent gravel-sized angular shale fragments; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

2Cr—11 inches; weathered shale.

#### Range in Characteristics

Particle-size control section: 18 to 35 percent clay Depth to a paralithic contact: 4 to 20 inches to shale Rock fragments: 0 to 15 percent gravel. All fragments are sandstone.

Calcium carbonate equivalent: 1 to 5 percent in the surface and 5 to 10 in the subsoil

Reaction: neutral in the surface and slightly to moderately alkaline in the substratum

A horizon:

Hue: 10YR or 2.5Y Value: 3 to 5 moist Chroma: 4 dry and moist

C horizon: Hue: 2.5Y

Value: 5 or 6 dry; 4 or 5 moist

Chroma: 2 to 6 dry

Texture: silty clay loam or clay loam

## **Evpark Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Moderately deep Drainage class: Well drained Permeability: Moderately slow Geomorphic position: Mesas, cuestas, and ridges Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope range: 2 to 8 percent Elevation: 6,800 to 8,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# Typical Pedon

Evpark fine sandy loam, in an area of mapping unit 555, Parkelei-Evpark fine sandy loams, 2 to 8 percent slopes; Cibola County, New Mexico; Plumasano Basin Quadrangle; 1,600 feet south and 1,200 feet west of the northeast corner of sec. 12, T. 8 N., R. 19 W.; latitude 34 degrees, 56 minutes, 22 seconds and longitude 108 degrees, 47 minutes, 13 seconds.

- A—0 to 3 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; few fine tubular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt1—3 to 16 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few fine tubular pores; common distinct clay films bridging sand grains; neutral (pH 7.2); clear smooth boundary.
- Bt2—16 to 20 inches; brown (7.5YR 4/4) clay loam, strong brown (7.5YR 4/6) moist; strong medium prismatic structure; hard, firm, sticky and slightly plastic; common very fine and few fine roots; few fine tubular pores; many prominent clay films on faces of peds; neutral (pH 7.2); clear smooth boundary.
- Bt3—20 to 29 inches; strong brown (7.5YR 4/6) sandy clay loam, strong brown (7.5YR 4/6) moist; strong medium prismatic structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; many prominent clay films on faces of peds and bridging sand grains; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Btk—29 to 35 inches; strong brown (7.5YR 4/6) sandy clay loam, brown (7.5YR 5/4) moist; weak medium prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; common prominent clay films on faces of peds and bridging sand grains; strongly effervescent; common fine seams and filaments of calcium carbonate; slightly alkaline (pH 7.6); abrupt smooth boundary.

2R-35 inches; sandstone

#### Range in Characteristics

Particle-size control section: 20 to 35 percent clay and

greater than 35 percent sand

Depth to lithic contact: 20 to 40 inches to sandstone Reaction: neutral to slightly alkaline in the surface and neutral to moderately alkaline in the subsoil

A horizon:

Hue: 7.5YR or 10YR Value: 3 or 4 moist Chroma: 3 or 4 moist

Texture: fine sandy loam or loam

Rock fragments: 0 to 10 percent sandstone gravel

Bt horizons:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 to 5 moist

Texture: sandy clay loam or clay loam

Rock fragments: 0 to 5 percent sandstone gravel

Btk horizon (when present):

Value: 4 or 5 Chroma: 4 or 6

Calcium carbonate equivalent: 1 to 10 percent

Some pedons have a Bk horizon above the lithic contact.

### Fajada Series

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Typic Natrargids

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors and cuestas Parent material: Alluvial material derived from

sandstone and shale Slope range: 1 to 5 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

# **Typical Pedon**

Fajada gravelly sandy clay loam, in an area of mapping unit 116, Fajada-Huerfano-Benally complex, 1 to 5 percent slopes; McKinley County, New Mexico; Seven Lakes NW Quadrangle; 200 feet west and 2,100 feet north of the southeast corner of sec. 25, T. 20 N., R. 11 W.; latitude 35 degrees, 56 minutes, 40 seconds and longitude 107 degrees, 56 minutes, 55 seconds.

E—0 to 2 inches; light yellowish brown (10YR 6/4)

gravelly sandy clay loam, dark yellowish brown (I0YR 4/6) moist; moderate fine granular structure; soft, friable, slightly sticky and nonplastic; few fine and very fine roots; common fine vesicular pores; 30 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btkn1—2 to 6 inches; yellowish brown (10YR 5/4) clay loam yellowish brown (I0YR 5/6) moist; moderate fine prismatic structure; hard, firm, sticky and slightly plastic; few medium, fine and very fine roots; many fine irregular pores; common prominent clay films on faces of peds and lining pores; strongly effervescent; very few very fine and fine masses of calcium carbonate; very strongly alkaline (pH 9.4); abrupt smooth boundary.

Btkn2—6 to 12 inches; yellowish brown (10YR 5/6) sandy clay loam, dark yellowish brown (10YR 4/6) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and nonplastic; few medium, fine and very fine roots; few fine tubular pores; common distinct clay films bridging sand grains; strongly effervescent; few fine masses and seams of calcium carbonate; very strongly alkaline (pH 9.6); clear smooth boundary.

Btknz—12 to 16 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/6) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; few fine and very fine roots; few fine tubular pores; few distinct clay films bridging sand grains; few clusters of very fine and fine sodium sulfate crystals; EC of 3.7 mmhos/cm; strongly effervescent; few fine masses, seams and filaments of calcium carbonate; very strongly alkaline (pH 9.4); clear smooth boundary.

Bkyz—16 to 28 inches; light yellowish brown (I0YR 6/4) clay loam (10YR 5/6) yellowish brown moist, massive, hard, firm, sticky and plastic; few very fine irregular pores; many clusters of very fine and fine sodium sulfate and gypsum crystals; EC of 10.6 mmhos/cm; 2 percent gypsum; strongly effervescent; very few very fine and fine masses of calcium carbonate; moderately alkaline (pH 8.2); clear smooth boundary.

2Cr—28 inches; soft sandstone interbedded with soft shale.

#### Range in Characteristics

Particle-size control section: 20 to 35 percent clay and greater than 35 percent sand

Depth to paralithic contact: 20 to 40 inches to interbedded soft sandstone and shale

Depth to sodium sulfate and/or gypsum accumulations: 10 to 25 inches. Sodium sulfate is present in all pedons. Gypsum may be absent, or insignificant, in some pedons.

E horizon:

Value: 3 to 6 dry, 3 to 5 moist

Chroma: 3 to 6

Rock fragments: 5 to 35 percent siderite and

sandstone gravel

Reaction: moderately or strongly alkaline

Btkn horizon: Hue: 10YR or 2.5Y

Value: 3 to 6 dry, 3 to 5 moist

Chroma: 3 to 6

Texture: clay loam or sandy clay loam

Rock fragments: 0 to 5 percent siderite and sandstone

gravel

Calcium carbonate equivalent: 1 to 15 percent

Sodicity: SAR of 13 to 35

Salinity: EC of 1 to 4 mmhos/cm

Reaction: strongly or very strongly alkaline

Bkyz horizon: Hue: 10YR or 2.5Y

Value: 4 to 6 dry and moist

Chroma: 4 to 6

Texture: clay loam or sandy clay loam

Rock fragments: 0 to 5 percent siderite and sandstone

gravel

Calcium carbonate equivalent: 1 to 15 percent

Sodicity: SAR of 5 to 13

Salinity: EC of 4 to 16 mmhos/cm

Gypsum: 5 to 10 percent

Reaction: moderately to strongly alkaline

#### Farb Series

Taxonomic class: Loamy, mixed, superactive, calcareous, mesic Lithic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Cuestas mesas, hills, and ridges Parent material: Eolian material over residuum derived

from sandstone Slope range: 2 to 15 percent

*Elevation:* 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

## **Typical Pedon**

Farb sandy loam, in an area of mapping unit 118, Farb-

Chipeta-Rock outcrop complex, 2 to 30 percent slopes; McKinley County, New Mexico; Seven Lakes NW Quadrangle; 1,100 feet west and 1,600 feet north of the southeast corner of sec. 6, T. 19 N., R. 10 W.; latitude 35 degrees, 54 minutes, 12 seconds and longitude 107 degrees, 56 minutes, 9 seconds.

- A—0 to 2 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.
- C—2 to 9 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and common very fine roots; few very fine irregular pores; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

2R-9 inches; sandstone.

### **Range in Characteristics**

Particle-size control section: 5 to 18 percent clay Depth to a lithic contact: 5 to 20 inches to sandstone Calcium carbonate equivalent: 1 to 10 percent Reaction: slightly alkaline

A horizon:

Hue: 10YR or 2.5Y Value: 4 or 5 moist Chroma: 3 or 4 moist

Rock fragments: 0 to 60 percent sandstone gravel

C horizon:

Hue: 10YR or 2.5Y Value: 4 or 5 moist Chroma: 3 or 4 moist

Rock fragments: 0 to 15 percent sandstone gravel

### **Farview Series**

Taxonomic class: Loamy, mixed, active, calcareous,

mesic Lithic Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid Geomorphic position: Cuestas

Parent material: Eolian material derived from

sandstone

Slope range: 2 to 15 percent Elevation: 6,500 to 6,900 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Farview loamy fine sand, in an area of mapping unit 255, Farview-Rock outcrop complex, 2 to 15 percent slopes; McKinley County, New Mexico; Navajo Reservation; Oak Spring Quadrangle; T. 17N, R. 15 W.; latitude 35 degrees, 43 minutes, 53 seconds and longitude 108 degrees, 28 minutes, 51 seconds.

- A—0 to 1 inches; yellowish brown (10YR 5/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; weak very fine granular structure; loose, very friable, nonsticky and nonplastic; common very fine roots; 5 percent gravel; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- C—1 to 10 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine, fine, and few medium roots; 1 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- Ck—10 to 17 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 1 percent gravel; slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.

2R—17 inches; sandstone bedrock

#### **Range in Characteristics**

Particle-size control section: 10 to 18 percent clay Rock fragments: 0 to 10 percent gravel and 0 to 5 percent cobbles. All fragments are sandstone. Depth to lithic contact: 5 to 20 inches to sandstone Calcium carbonate equivalent: 1 to 10 percent Reaction: slightly alkaline in the surface and moderately alkaline in the substratum

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry, 4 or 5 moist Chroma: 4 dry or moist

C horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry, 4 or 5 moist Chroma: 4 to 6, dry and moist

#### **Fikel Series**

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Haplustalfs

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley sides

Parent material: Fan alluvium derived from sandstone

and shale

Slope range: 1 to 6 percent Elevation: 7,000 to 7,600 feet

Mean annual air temperature: 49 to 53 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 115 to 135 days

#### **Typical Pedon**

Fikel clay loam, in an area of mapping unit 308, Fikel-Venzuni complex, 1 to 6 percent slopes; McKinley County, New Mexico; Pine Canyon Quadrangle; 600 feet east, 1,400 feet south of the northwest corner of sec. 9, T. 13 N., R. 13 W.; latitude 35 degrees, 22 minutes, 28 seconds and longitude 108 degrees, 13 minutes, 39 seconds.

- A—0 to 3 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; 3 percent siliceous gravel; neutral (pH 7.2); abrupt smooth boundary (1 to 3 inches thick).
- Bt—3 to 14 inches; reddish brown (5YR 4/3) clay, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; few fine irregular pores; many prominent clay films on faces of peds; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary (5 to 21 inches thick).
- Btk1—14 to 32 inches; reddish brown (5YR 4/3) clay, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; few very fine irregular pores; many prominent clay films on faces of peds; few fine masses of calcium carbonate; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- Btk2—32 to 50 inches; reddish brown (5YR 4/3) sandy clay loam, reddish brown (5YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; common distinct clay films on faces of peds; common fine and medium masses of calcium carbonate; violently effervescent (6 percent calcium carbonate equivalent); moderately alkaline (pH 8.0); clear smooth boundary.

Btk3—50 to 65 inches; reddish brown (5YR 4/3) clay, dark reddish brown (5YR 4/3) moist; moderate fine subangular blocky structure; very hard, very firm,

sticky and plastic; few very fine roots; common distinct clay films on faces of peds; few very fine masses of calcium carbonate; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Btk4—65 to 70 inches; reddish brown (5YR 4/3) sandy clay loam, dark reddish brown (5YR 4/3) moist; moderate fine subangular blocky structure; hard, very firm, slightly sticky and slightly plastic; few very fine roots; common distinct clay films on faces of peds; few very fine masses of calcium carbonate; very slightly effervescent; moderately alkaline (pH 8.0). (The combined thickness of the Btk horizons is 28 to 60 inches.)

#### Range in Characteristics

Particle-size control section: 35 to 50 percent clay and greater than 30 percent sand

Depth to secondary calcium carbonate: 7 to 28 inches, with some pedons calcareous to the surface

Salinity: 0 to 2 mmhos/cm Sodicity: SAR of 0 to 5

Reaction: neutral to slightly alkaline in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Hue: 2.5YR to 7.5YR

Value: 3 to 5 dry, 2.5 or 3 moist

Chroma: 2 or 3

Rock fragments: 0 to 5 percent siliceous gravel Calcium carbonate equivalent: 0 to 5 percent

Bt horizon:

Hue: 2.5YR to 5YR

Value: 3 to 5 dry, 2.5 or 3 moist

Chroma: 2 or 3 moist

Rock fragments: 0 to 10 percent siliceous gravel Calcium carbonate equivalent: 0 to 5 percent

Btk horizons:

Hue: 2.5YR or 5YR

Value: 3 to 6 dry, 2.5 to 4 moist Chroma: 3 or 4 dry, 2 to 4 moist

Texture: clay, clay loam, sandy clay, or sandy clay

loam

Rock fragments: 0 to 10 percent siliceous gravel Calcium carbonate equivalent: 3 to 10 percent

# Flugle Series

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Very deep Drainage class: Well drained

Permeability: Moderate or moderately slowly

Geomorphic position: Mesas, cuestas, hills, ridges,

and valley sides

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope range: 1 to 8 percent Elevation: 6,200 to 7,300 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 115 to 135 days

## **Typical Pedon**

Flugle loam, in an area of mapping unit 315, Flugle-Fragua complex, 1 to 10 percent slopes; McKinley County, New Mexico; Thoreau Quadrangle; 800 feet south and 1,000 feet west of the northeast corner of sec. 17, T. 14 N., R. 12 W.; latitude 35 degrees, 26 minutes, 54 seconds and longitude 108 degrees, 7 minutes, 31 seconds.

- A—0 to 3 inches; light brown (7.5YR 6/4) loam, dark brown (7.5YR 3/4) moist, moderate fine platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine vesicular and irregular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.
- Bt1—3 to 10 inches; dark brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; many distinct clay films on ped faces and bridging sand grains; strongly effervescent; moderately alkaline; abrupt smooth boundary.
- Bt2—10 to 28 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.
- Bk—28 to 65 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; strongly effervescent; many very fine and fine masses of calcium carbonate; moderately alkaline.

#### **Range in Characteristics**

Particle-size control section: 18 to 35 percent clay and greater than 35 percent sand Reaction: neutral to moderately alkaline A horizon:

Hue: 7.5YR or 10YR

Value: 4 to 6 dry; 3 or 4 moist Chroma: 3 or 4 dry; 3 to 6 moist Texture: fine sandy loam or loam

Rock fragments: 0 to 5 percent sandstone gravel Calcium carbonate equivalent: 0 to 5 percent

Bt horizon:

Hue: 5YR to 10YR

Value: 4 or 5 dry; 3 to 5 moist

Chroma: 3 to 6

Texture: sandy clay loam or clay loam Calcium carbonate equivalent: 0 to 5 percent

Bk or C horizon: Hue: 7.5YR or 10YR Value: 3 to 5 moist Chroma: 4 to 6 moist

Texture: sandy loam or sandy clay loam Calcium carbonate equivalent: 5 to 10 percent

# **Fortwingate Series**

Taxonomic class: Fine, mixed, superactive, frigid

Vertic Haplustalfs

Depth class: Moderately deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Cuestas, hogbacks, hills, and

ridges

Parent material: Slope alluvium over residuum derived from sandstone, shale, or dolomitic limestone

Slope range: 2 to 45 percent Elevation: 7,200 to 8,200 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# Typical Pedon

Fortwingate loam, in an area of mapping unit 405, Fortwingate-Owlrock complex, 2 to 8 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; 1,650 feet east, 750 feet south of the northwest corner of sec. 22, T. 13 N., R. 16 W.; latitude 35 degrees, 20 minutes, 53 seconds and longitude 108 degrees, 31 minutes, 25 seconds.

- Oi—0 to 1 inches; slightly decomposed pine needles, oak leaves, and grass.
- A—1 to 4 inches; dark reddish gray (5YR 4/2) loam, dark reddish brown (5YR 3/2) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine, fine, and few medium roots; 2 percent gravel size sandstone

fragments; neutral (pH 7.0); abrupt smooth boundary.

Bt—4 to 9 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine, fine, and few medium roots; few very fine irregular pores; common distinct clay films on faces of peds; 2 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

Btss—9 to 26 inches; reddish brown (2.5YR 4/4) clay, dark reddish brown (2.5YR 3/4) moist; strong fine and medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine and medium roots; few very fine irregular pores; the bottom 1.5 inches is weathered sandstone; few pressure faces and slickensides; few vertical cracks 1 mm wide; many prominent clay films on faces of peds; 1 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

2R-26 inches; San Andreas limestone.

### Range in Characteristics

Particle-size control section: 35 to 50 percent clay
Depth to lithic contact: 20 to 40 inches to dolomitic
limestone. Some pedons contact a locally present
sandstone bed in the San Andreas formation.

Vertic features: pressure faces and slickensides evident between 5 and 40 inches depth. Some pedons have few vertical cracks less than 5 mm wide.

Reaction: Neutral to slightly alkaline

A horizon:

Hue: 5YR or 7.5YR Value: 4 or 5 dry, 3 moist

Chroma: 2 or 3

Rock fragments: 0 to 25 percent total; 0 to 20 percent gravel, 0 to 5 percent cobbles, and 0 to 1 percent stones. All fragments are sandstone and limestone.

Reaction: neutral

Bt horizon:

Hue: 2.5YR or 5YR Chroma: 3 or 4

Textures: clay loam or clay

Rock fragments: 0 to 5 percent sandstone gravel

Reaction: neutral or slightly alkaline

Btss horizon: Hue: 2.5YR or 5YR Chroma: 3 or 4

Textures: clay loam, sandy clay, or clay

Rock fragments: 0 to 5 percent sandstone gravel Reaction: neutral or slightly alkaline

Some pedons have a Btk or Bk horizon immediately above the lithic contact.

## **Fragua Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, and valley

sides

Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 1 to 10 percent Elevation: 6,400 to 7,300 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 115 to 135 days

#### **Typical Pedon**

Fragua loamy fine sand, in an area of mapping unit 315, Flugle-Fragua complex, 1 to 10 percent slopes; McKinley County, New Mexico; Thoreau NE Quadrangle; about 200 feet south and 800 feet west of the northeast corner of sec. 17, T. 14 N., R. 12 W.; latitude 35 degrees, 26 minutes, 54 seconds and longitude 108 degrees, 7 minutes, 31 seconds.

- A—0 to 2 inches; light brown (7.5YR 6/4) loamy fine sand, dark brown (7.5YR 3/4) moist; moderate medium platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine vesicular and irregular pores; strongly effervescent; moderately alkaline (pH 7.6); abrupt smooth boundary.
- Btk—2 to 19 inches; reddish brown (5YR 4/4) sandy loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine irregular pores; many distinct clay films bridging sand grains; violently effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Bk—19 to 65 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few

very fine roots; few very fine irregular pores; violently effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0).

### Range in Characteristics

Particle-size control section: 10 to 18 percent clay Calcium carbonate equivalent: less than 10 percent Reaction: neutral to moderately alkaline

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry; 3 or 4 moist

Chroma: 2 to 4 moist

Bt horizon:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry; 3 to 5 moist Chroma: 4 to 6 dry; 3 to 6 moist

Bk horizon:

Hue: 7.5YR or 10YR Value: 3 to 6 moist

Chroma: 4 to 6 dry or moist

Some pedons have a sandy C horizon below the Bk horizon.

# Fraguni Series

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderate

Geomorphic position: Mesas, cuestas, plateaus, and

valley sides

Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 1 to 8 percent Elevation: 6,500 to 7,500 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Fraguni loamy fine sand, in an area of mapping unit 320, Parkelei-Fraguni complex, 1 to 8 percent slopes; McKinley County, New Mexico; Vanderwagen Draw Quadrangle; 2,000 feet north and 2,600 feet west of the southeast corner of sec. 31, T. 12 N., R. 18 W.; latitude 35 degrees, 13 minutes, 26 seconds and longitude 108 degrees, 46 minutes, 39 seconds.

A-0 to 4 inches; brown (7.5YR 5/3) loamy fine sand,

dark brown (7.5YR 3/3) moist; single grain structure; loose, very friable, nonsticky and nonplastic; many very fine and few fine roots; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—4 to 20 inches; brown (7.5YR 5/3) fine sandy loam, dark brown (7.5YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and common fine and medium roots; few very fine and fine irregular pores; few distinct clay films on faces of peds and bridging sand grains; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt2—20 to 46 inches; light brown (7.5YR 6/4) loamy fine sand, brown (7.5YR 5/4) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; few very fine irregular pores; few distinct clay films on faces of peds and bridging sand grains; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt3—46 to 58 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, moderately sticky and slightly plastic; few very fine and fine roots; few very fine irregular pores; common distinct clay films on faces of peds; neutral (pH 6.8); abrupt smooth boundary.

BC—58 to 70 inches; yellowish red (5YR 5/6) fine sandy loam, yellowish red (5YR 4/6) moist; moderate very fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; slightly alkaline (pH 7.6).

#### Range in Characteristics

Particle-size control section: 10 to 18 percent clay and greater than 35 percent sand

Reaction: neutral or slightly alkaline

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry, 3 or 4 moist

Chroma: 3 or 4

Bt horizon:

Hue: 5YR to 10YR

Value: 4 to 6 dry, 3 or 4 moist Chroma: 3 to 6 dry, 3 or 4 moist

Texture: sandy loam, fine sandy loam, loamy fine

sand, or sandy clay loam

BC horizon:

Hue: 5YR or 7.5YR

Value: 4 to 6 dry, 3 or 4 moist

Chroma: 4 to 6 dry, 4 to 6 moist

Texture: sandy loam, fine sandy loam, or sandy clay

Some pedons have a Btk horizon.

### **Fruitland Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

calcareous, mesic Typic Torriorthents

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid Geomorphic position: Valley floors

Parent material: Eolian material and stream alluvium

derived from sandstone Slope range: 1 to 5 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

#### **Typical Pedon**

Fruitland loamy fine sand, in an area of mapping unit 110, Benally-Fruitland association, 1 to 5 percent slopes; Navajo Reservation; San Juan County, New Mexico; Red Lake Well Quadrangle; T. 19 N., R. 14 W.; latitude 35 degrees, 52 minutes, 25 seconds and longitude 108 degrees, 19 minutes, 18 seconds.

- A—0 to 3 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, very friable, nonsticky and nonplastic; many very fine roots; very slightly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.
- C1—3 to 10 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; very slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C2—10 to 19 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; few very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- Ck1—19 to 29 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine irregular pores; slightly effervescent; few very fine masses of calcium

carbonate; slightly alkaline (pH 7.6); abrupt smooth boundary.

Ck2—29 to 65 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; strongly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 5 to 18 percent clay

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 4 or 5 moist Chroma: 4 to 6, dry and moist

Calcium carbonate equivalent: 0 to 1 percent

Reaction: slightly alkaline

C horizon: Hue: 10YR

Value: 5 or 6, dry and moist Chroma: 4 to 6, dry and moist

Texture: loamy sand or loamy fine sand Calcium carbonate equivalent: 0 to 1 percent Reaction: slightly or moderately alkaline

Ck horizon: Hue: 10YR

Value: 5 or 6, dry and moist Chroma: 4 to 6, dry and moist

Calcium carbonate equivalent: 1 to 10 percent

Reaction: moderately alkaline

#### **Galzuni Series**

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Paleustalfs Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, and hills Parent material: Eolian material and slope alluvium

derived from shale and sandstone

Slope range: 1 to 8 percent Elevation: 6,800 to 7,600 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

### Typical Pedon

Galzuni loam, in an area of mapping unit 550, Bryway-Galzuni loams, 1 to 8 percent slopes; Cibola County, New Mexico; Shoemaker Canyon Quadrangle; 2,000

feet east and 800 feet north of the southwest corner of sec. 2, T. 8 N., R. 17 W.; latitude 34 degrees, 56 minutes, 47 seconds and longitude 108 degrees, 35 minutes, 59 seconds.

- A—0 to 2 inches; yellowish brown (10YR 5/6) loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular pores; 5 percent gravel; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Bt1—2 to 4 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 3/6) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine irregular pores; common distinct clay films on faces of peds; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Bt2—4 to 14 inches; strong brown (7.5YR 5/6) clay, brown (7.5YR 4/4) moist; strong medium prismatic structure; very hard, very firm, sticky and plastic; few very fine, fine, and medium roots; few fine tubular pores; many prominent clay films on faces of peds; slightly alkaline (pH 7.4); clear smooth boundary.
- Bt3—14 to 23 inches; yellowish brown (10YR 5/6) clay, brown (7.5YR 4/4) moist; weak coarse prismatic structure; very hard, very firm, sticky and plastic; few very fine and fine roots; few fine tubular pores; many prominent clay films on faces of peds; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Btk—23 to 32 inches; strong brown (7.5YR 5/6) clay loam, brown (7.5YR 4/4) moist; weak medium prismatic structure; hard, firm, sticky and plastic; few very fine roots; few very fine irregular pores; common distinct clay films bridging sand grains and on faces of peds; slightly effervescent; few fine irregular filaments of calcium carbonate; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- Bk1—32 to 52 inches; yellowish brown (10YR 5/6) sandy clay, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; common very fine irregular pores; slightly effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk2—52 to 65 inches; yellowish brown (10YR 5/6) sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine irregular pores; slightly effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6).

#### Range in Characteristics

Particle-size control section: 35 to 50 percent clay Depth to calcium carbonate: 10 to 30 inches Reaction: neutral to slightly alkaline in the surface and

slightly to moderately alkaline in the subsoil

A horizon:

Value: 3 or 4 moist

Chroma: 3 to 6 dry, 3 or 4 moist

Rock fragments: 0 to 10 percent sandstone gravel

Bt horizons:

Textures: clay or clay loam

Btk horizon:

Hue: 7.5YR or 10YR

Calcium carbonate equivalent: 1 to 5 percent

Bk horizons:

Hue: 7.5YR or 10YR Value: 4 or 5 moist Chroma: 4 or 6 moist

Texture: sandy clay, sandy clay loam, or clay loam Calcium carbonate equivalent: 1 to 5 percent

# Gapmesa Series

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow

Geomorphic position: Cuestas, hills, and ridges Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 3 percent Elevation: 6,400 to 6,800

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

#### Typical Pedon

Gapmesa fine sandy loam, in an area of mapping unit 245, Buckle-Gapmesa-Barboncito complex, 1 to 6 percent slopes; McKinley County, New Mexico; Gallup West Quadrangle; 350 feet west and 2,200 feet south of the northwest corner of sec. 18, T. 16 N., R. 18 W.; latitude 35 degrees, 38 minutes, 24 seconds and longitude 108 degrees, 04 minutes, 55 seconds.

A—0 to 1 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—1 to 9 inches; yellowish brown (10YR 5/4) loam,

dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few faint clay films on faces of peds and bridging sand grains; very slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Btk1—9 to 20 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine and few medium roots; few very fine irregular pores; common distinct clay films on faces of peds; strongly effervescent; common very fine and fine masses of calcium carbonate; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—20 to 31 inches; light yellowish brown (10YR 6/6) clay loam, yellowish brown (10YR 5/4) moist; moderate very fine and fine subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine irregular pores; 1 percent gravel; common distinct clay films on faces of peds; strongly effervescent; many fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.

R-31 inches; sandstone bedrock.

#### Range in Characteristics

Particle-size control section: 18 to 35 percent clay Rock fragments: 0 to 5 percent sandstone gravel Depth to a lithic contact: 20 to 40 inches to sandstone Depth to calcium carbonate: 8 to 17 inches

A horizon: Hue: 10YR

Value: 5 dry and 4 or 5 moist Chroma: 4 to 6 dry and moist Reaction: slightly alkaline

Bt horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry and 4 moist Chroma: 4 to 6 dry and moist

Texture: sandy clay loam, fine sandy loam, or loam

Reaction: slightly alkaline

Btk horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry and 4 or 5 moist Chroma: 4 to 6 dry and moist

Texture: sandy clay loam or clay loam

Reaction: moderately alkaline

Calcium carbonate equivalent: 1 to 5 percent

#### **Gish Series**

Classification: Fine, mixed, superactive, mesic Ustic

Haplocambids

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley sides and drainageways Parent material: Fan alluvium derived from shale

Slope range: 1 to 8 percent Elevation: 6,100 to 7,200 feet

Mean annual air temperature: 45 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Gish clay loam, in an area of mapping unit 242, Gish-Mentmore complex, 1 to 8 percent slopes; McKinley County, New Mexico; Gallup East Quadrangle; 2,600 feet west, 900 feet north of the southeast corner sec. 21, T. 16 N., R. 17 W. latitude 35 degrees, 35 minutes, 52 seconds and longitude 108 degrees, 38 minutes, 37 seconds.

A—0 to 3 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; thin surface crust above strong very fine granular structure; slightly hard, firm, slightly sticky and slightly plastic; many very fine roots; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw—3 to 13 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; strong very fine, fine and medium angular blocky structure; very hard, very firm, moderately sticky and moderately plastic; many very fine roots; few very fine irregular pores; few sand coatings on ped faces; few pressure faces; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bky1—13 to 27 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; weak very fine and fine subangular blocky structure; very hard, very firm, moderately sticky and moderately plastic; common very fine and few fine roots; few very fine irregular pores; 1 percent gravel; very slightly effervescent; few very fine masses of calcium carbonate; common very fine masses of gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bky2—27 to 55 inches; olive brown (2.5Y 4/4) and (2.5Y 3/2) clay, olive brown (2.5Y 4/4) moist; weak medium and coarse subangular blocky structure; very hard, very firm, moderately sticky and

moderately plastic; few very fine roots; few very fine irregular pores; few pressure faces; very slightly effervescent; few very fine masses of calcium carbonate; common very fine masses of gypsum; slightly alkaline (pH 7.8); clear smooth boundary.

Bky3—55 to 64 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few very fine irregular pores; 4 percent gravel; very slightly effervescent; few very fine masses of calcium carbonate; few very fine masses of gypsum; slightly alkaline (pH 7.6); clear smooth boundary.

Bky4—64 to 70 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; 1 percent gravel; very slightly effervescent; few very fine masses of calcium carbonate; few very fine masses of gypsum; slightly alkaline (pH 7.6).

### **Range in Characteristics**

Particle-size control section: 35 to 50 percent clay Calcium carbonate equivalence: 0 to 2 percent in the upper part of the soil and 1 to 10 percent in the lower subsoil.

Gypsum percent: 0 to 2 percent in the By horizons

Salinity: 0 to 2 mmhos/cm

Reaction: Slightly to moderately alkaline

A horizon:

Hue: 2.5Y or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist

Rock fragments: 0 to 10 percent gravel

Bw horizon: Hue: 2.5Y

Value: 4 to 6 dry, 4 or 5 moist Chroma: 2 to 4 dry and moist Texture: clay or clay loam.

Bky and Bk horizons:

Hue: 2.5Y

Value: 4 to 6 dry or moist Chroma: 2 to 4 dry and moist

Texture: clay, clay loam, loam, or silt loam

# **Hagerwest Series**

Taxonomic class: Fine-loamy, mixed, superactive, mesic Ustic Haplargids

Depth class: Moderately deep Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 5 percent Elevation: 6,500 to 7,200 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Hagerwest fine sandy loam, in an area of mapping unit 220, Hagerwest-Bond fine sandy loams, 1 to 8 percent slopes; McKinley County, New Mexico; Heart Rock Quadrangle; 1,600 feet east and 600 feet north of the southwest corner of sec. 2, T. 16 N., R. 12 W.; latitude 35 degrees, 38 minutes, 24 seconds and longitude 108 degrees, 4 minutes, 55 seconds.

- A—0 to 2 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few medium and common fine and very fine roots; many very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt1—2 to 7 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few medium and common fine and very fine roots; common very fine irregular pores; few faint clay films bridging sand grains; neutral (pH 7.2); clear smooth boundary.
- Bt2—7 to 13 inches; strong brown (7.5YR 4/6) sandy clay loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine irregular pores; common distinct clay films on faces of peds, lining pores and bridging sand grains; slightly effervescent; neutral (pH 7.2); abrupt smooth boundary.
- Btk—13 to 19 inches; reddish yellow (7.5YR 6/6) sandy clay loam, strong brown (7.5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few fine and common very fine roots; common very fine irregular pores; 2 percent gravel; strongly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bk—19 to 35 inches; very pale brown (10YR 7/3) sandy loam, pale brown (10YR 6/3) moist; massive; hard, friable, nonsticky and nonplastic;

common very fine irregular pores; 10 percent gravel; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

2R—35 inches; hard sandstone.

#### Range in Characteristics

Particle-size control section: 18 to 35 percent clay Rock fragments: 0 to 15 percent sandstone gravel Depth to a lithic contact: 20 to 40 inches to hard sandstone

Depth to calcium carbonate: 8 to 23 inches
Other features: C horizons are present in some
pedons. A few of these C horizons have hues of
2.5Y.

A horizon:

Hue: 7.5YR or 10 YR

Value: 5 or 6 dry; 3 to 5 moist Chroma: 4 to 6 dry and moist Reaction: neutral or slightly alkaline

Bt horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry; 3 to 5 moist Chroma: 4 to 6 dry; 3 to 6 moist Texture: sandy clay loam or clay loam Reaction: neutral or slightly alkaline

Btk and Bk horizon: Hue: 7.5YR or 10YR

Value: 5 or 7 dry; 4 to 6 moist Chroma: 3 to 6 dry and moist

Texture: sandy clay loam, sandy loam, or clay loam

Reaction: moderately alkaline

Calcium carbonate equivalent: 1 to 10 percent

#### **Hamburn Series**

Taxonomic class: Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torrifluvents

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 5,600 to 6,000 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

# **Typical Pedon**

Hamburn clay loam, in an area of mapping unit 235, Notal-Hamburn complex, 0 to 2 percent slopes; San Juan County, New Mexico; Navajo Reservation; The Pillar 3 SE Quadrangle; latitude 36 degrees, 04 minutes, 18 seconds and longitude 108 degrees, 21 minutes, 53 seconds.

- AC—0 to 3 inches; olive brown (2.5Y 4/4) clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, sticky and plastic; many very fine and fine roots; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- C1—3 to 8 inches; light olive brown (2.5Y 5/6) sandy clay loam, light olive brown (2.5Y 5/6) moist; massive; slightly hard, friable, sticky and plastic; many very fine and fine roots; vertical crack from a depth of 5 to 14 inches and less than 5 mm wide; pockets of finely stratified silt and very fine sand; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.
- C2—8 to 29 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; many very fine and fine roots; vertical crack less than 5 mm wide to a depth of 14 inches; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.
- C3—29 to 40 inches; light olive brown (2.5Y 5/4) sandy clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; common very fine and fine roots; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- Cky1—40 to 52 inches; light olive brown (2.5Y 5/4) sandy clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; slightly effervescent; common very fine masses of calcium carbonate; few very fine masses of gypsum; strongly alkaline (pH 8.8); abrupt smooth boundary.
- Cky2—52 to 70 inches; light olive brown (2.5Y 5/4) clay loam, light olive brown (2.5Y 5/4) moist; hard, firm, sticky and plastic; few very fine and fine roots; slightly effervescent; common very fine masses of calcium carbonate; few very fine masses of gypsum; moderately alkaline (pH 8.2).

# Range in Characteristics

Particle-size control section: 27 to 35 percent clay Calcium carbonate equivalent: 1 to 5 percent

Gypsum: 0 to 5 percent

Salinity: EC of 1 to 6 mmhos/cm

Sodicity: SAR of 0 to 10. SAR increases with depth.

A and AC horizons: Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 4 or 5 moist

Chroma: 4 dry and moist

Textures: sandy clay loam or clay loam

Reaction: moderately alkaline

C and Cky horizons: Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 4 or 5 moist Chroma: 3 or 4, dry and moist

Texture: clay loam, sandy clay loam, silty clay loam,

silt loam, or sandy loam

Reaction: moderately to strongly alkaline

#### Hawaikuh Series

Taxonomic class: Fine, mixed, superactive, mesic

Ustic Haplargids

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow and slow

Geomorphic position: Valley sides and valley floors Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 1 to 5 percent Elevation: 6,000 to 6,900 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# **Typical Pedon**

Hawaikuh silt loam, in an area of mapping unit 225, Aquima-Hawaikuh silt loams, 1 to 5 percent slopes; McKinley County, New Mexico; Tekapo Quadrangle; 1,200 feet south and 1,500 feet west of the northeast corner of sec. 12, T. 9 N., R. 20 W.; latitude 35 degrees, 1 minute, 45 seconds and longitude 108 degrees, 53 minutes, 44 seconds.

A—0 to 3 inches; yellowish red (5YR 4/6) silt loam, dark reddish brown (5YR 3/4) moist; weak medium granular structure; soft, friable, nonsticky and slightly plastic; few medium and many fine and very fine roots; common fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Btk1—3 to 12 inches; red (2.5YR 4/6) silty clay loam, reddish brown (2.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine irregular pores; many prominent clay films on faces of peds; strongly effervescent; few fine irregular masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.

Btk2—12 to 29 inches; red (2.5YR 4/6) clay loam, dark

reddish brown (2.5YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; few very fine tubular pores; common prominent clay films on faces of peds; strongly effervescent; common fine irregular filaments and masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—29 to 39 inches; red (2.5YR 5/6) sandy clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; strongly effervescent; common fine irregular filaments and masses of calcium carbonate; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—39 to 54 inches; reddish brown (2.5YR 5/4) sandy loam, reddish brown (2.5YR 4/4) moist; massive; soft very friable, nonsticky and slightly plastic; few very fine roots; few very fine irregular pores; strongly effervescent; common fine irregular filaments and masses of calcium carbonate; moderately alkaline (pH 8.4); clear smooth boundary.

Bk3—54 to 65 inches; light red (2.5YR 6/6) silty clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; violently effervescent; common fine irregular filaments and masses of calcium carbonate; moderately alkaline (pH 8.4).

### Range in Characteristics

Particle-size control section: 35 to 50 percent clay and

greater than 20 percent sand

Rock fragments: 0 to 5 percent sandstone gravel Calcium carbonate equivalent: 3 to 14 percent

A horizon:

Hue: 2.5YR or 5YR Chroma: 4 or 6 dry

Texture: silt loam or clay loam Reaction: neutral to slightly alkaline

Bt horizons:

Hue: 2.5YR or 5YR Value: 3 or 4 moist

Texture: silty clay loam, clay loam, or sandy clay

Reaction: slightly or moderately alkaline

Bk horizons:

Hue: 2.5YR or 5YR

Value: 3 to 5 moist, 4 to 6 dry

Chroma: 3 or 4 moist, 4 or 6 dry

Texture: clay loam, silty clay loam, clay, sandy clay

loam, or sandy loam

Reaction: moderately or strongly alkaline

# **Heckly Series**

Taxonomic class: Fine, mixed, superactive, frigid

Typic Haplustalfs

Depth class: Moderately deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Hills and ridges

Parent material: Slope alluvium over residuum derived

from sandstone and siltstone Slope range: 5 to 40 percent Elevation: 7,800 to 8,200 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

#### Typical Pedon

Heckly extremely channery sandy loam, in an area of mapping unit 407, Cinnadale-Heckly association, 5 to 40 percent slopes; McKinley County, New Mexico; Page Quadrangle; 2,050 feet south and 700 feet west of the northeast corner of sec. 29, T. 13 N., R. 15 W.; latitude 35 degrees, 19 minutes, 46 seconds and longitude 108 degrees, 26 minutes, 34 seconds.

A—0 to 3 inches; reddish brown (2.5YR 5/4) extremely channery sandy loam, dark reddish brown (2.5YR 3/4) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; 55 percent channers, 10 percent flagstones; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—3 to 15 inches; reddish brown (2.5YR 4/4) channery clay, dark reddish brown (2.5YR 3/4) moist; strong very fine and fine subangular blocky structure; very hard, very firm, very sticky and very plastic; many very fine, fine, and few medium roots; few very fine irregular pores; many prominent clay films on faces of peds; 25 percent channers; slightly alkaline (pH 7.4); gradual wavy boundary.

Bt2—15 to 38 inches; reddish brown (2.5YR 4/4) very channery silty clay loam, dark reddish brown (2.5YR 3/4) moist; moderate very fine and fine subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; common prominent clay films on faces of

peds and coating rock fragments; 40 percent channers; slightly alkaline (pH 7.4); abrupt smooth boundary.

R—38 inches; very fine-grained sandstone and siltstone of the Abo formation.

#### Range in Characteristics

Particle-size control section: 35 to 45 percent clay and 20 to 35 percent rock fragments

Depth to lithic contact: 20 to 40 inches Reaction: neutral to slightly alkaline

A horizon:

Hue: 2.5YR to 7.5YR

Rock fragments: 10 to 70 percent total; 10 to 55 percent channers; 0 to 10 percent flagstones. All

fragments are sandstone.

Bt horizon:

Hue: 2.5YR or 5YR

Textures: clay loam, silty clay loam, or clay Rock fragments: 10 to 35 percent total; 10 to 30 percent channers; 0 to 10 percent flagstones. All fragments are sandstone and siltstone.

#### **Heshotauthla Series**

Taxonomic class: Fine, mixed, active, mesic Aridic

Natrustolls

Depth class: Very deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 1 percent Elevation: 6,300 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

### **Typical Pedon**

Heshotauthla clay, in an area of mapping unit 357, Heshotauthla clay, 0 to 1 percent slopes; McKinley County, New Mexico; Horsehead Canyon NW Quadrangle; 2,000 feet north and 200 feet west of the southeast corner of sec. 5, T. 11 N., R. 17 W.; latitude 35 degrees, 12 minutes, 43 seconds and longitude 108 degrees, 38 minutes, 43 seconds.

ABn—0 to 3 inches; brown (10YR 5/5) clay, dark brown (10YR 3/3) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; many fine and

medium vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Btn1—3 to 9 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; weak coarse prismatic structure parting to moderate coarse subangular blocky; extremely hard, very firm, very sticky and very plastic; common very fine and fine roots; few very fine irregular pores; many prominent clay films on faces of peds; common slickensides up to 2 inches in diameter; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

Btn2—9 to 18 inches; brown (10YR 5/3) clay dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; many prominent clay films on faces of peds; strongly effervescent; strongly alkaline (pH 9.0); gradual wavy boundary.

Btkz—18 to 32 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; common distinct clay films on faces of peds; strongly effervescent; few fine masses of calcium carbonate; few fine salt crystals; moderately alkaline (pH 8.2); gradual irregular boundary.

Bkz—32 to 65 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; massive; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; strongly effervescent; few fine masses of calcium carbonate; common fine and medium salt crystals; moderately alkaline (pH 8.2).

## Range in Characteristics

Particle-size control section: 48 to 60 percent clay Depth to salt (mostly sodium sulfate) crystals: 18 to 35 inches

Reaction: moderately to very strongly alkaline

A horizon: Value: 4 or 5 dry Chroma: 2 or 3

Calcium carbonate equivalent: 0 to 5 percent

Sodicity: SAR of 10 to 20 Salinity: EC of 1 to 2 mmhos/cm

Btn horizons: Hue: 7.5YR or 10YR Value: 4 or 5 dry Chroma: 2 or 4

Calcium carbonate equivalent: 0 to 5 percent

Sodicity: SAR of 20 to 40 Salinity: EC of 2 to 4 mmhos/cm

Bkz horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4

Calcium carbonate equivalent: 1 to 5 percent

Sodicity: SAR of 15 to 35

Salinity: EC of 5 to 10 mmhos/cm

# **Highdye Series**

Taxonomic class: Clayey, mixed, superactive, mesic

Lithic Haplustalfs

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Eolian material and slope alluvium over residuum derived from sandstone and shale

Slope range: 2 to 20 percent Elevation: 6,800 to 7,600 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches Frost-free period: 100 to 135 days

# Typical Pedon

Highdye fine sandy loam, in an area of mapping unit 317, Highdye-Evpark-Bryway complex, 2 to 20 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 2,100 feet west and 1,700 feet north of the southeast corner of sec. 22, T. 10 N., R. 17 W.; latitude 35 degrees, 04 minutes, 49 seconds and longitude 108 degrees, 37 minutes, 00 seconds.

A—0 to 3 inches; yellowish brown (10YR 5/6) fine sandy loam, brown (7.5YR 4/4) moist; weak fine and medium granular structure; soft, friable, nonsticky and nonplastic; few very fine and fine roots; common fine irregular pores; 10 percent gravel; neutral (pH 6.6); clear smooth boundary.

Bt1—3 to 5 inches; yellowish brown (10YR 5/4) clay loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; few fine irregular pores; common distinct clay films on faces of peds and bridges; slightly acid (pH 6.4); clear smooth boundary.

2Bt2—5 to 12 inches; brown (7.5YR 5/4) clay, strong brown (7.5YR 4/6) moist; moderate fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine and few medium roots; few fine irregular pores; 5 percent gravel; many prominent

clay films on faces of peds; moderately acid (pH 6.0); abrupt smooth boundary.

2R—12 inches; sandstone—weathered in the upper part.

# Range in Characteristics

Depth to the lithic contact: 6 to 20 inches to sandstone Particle-size control section: 35 to 55 percent clay Reaction: neutral in the surface and slightly acid to moderately acid in the subsoil

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 2 to 6 dry, 2 to 4 moist

Rock fragments: 0 to 30 percent total; 0 to 15 percent gravel; 0 to 20 percent cobbles or channers. All

fragments are sandstone.

Bt horizon:

Hue: 5YR or 7.5YR

Value: 4 to 6 dry, 3 to 5 moist Chroma: 3 to 6 dry, 3 to 6 moist Texture: clay loam, clay, or sandy clay

Rock fragments: 0 to 10 percent total; 0 to 10 percent gravel; 0 to 10 percent cobbles. All fragments are sandstone.

sandsione.

Some pedons have a paralithic contact of interbedded shale and sandstone above the lithic contact.

## **Hospah Series**

Taxonomic class: Clayey, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Breaks, hills, and ridges

Parent material: Colluvium and residuum derived from

sandstone and shale

Slope range: 2 to 35 percent slopes

Elevation: 6,400 to 7,000

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### **Typical Pedon**

Hospah extremely cobbly clay loam, in an area of mapping unit 250, Hospah-Skyvillage-Rock outcrop complex, 2 to 35 percent slopes; McKinley County, New Mexico; Kin Nahzin Ruins Quadrangle; 300 feet south and 1,000 feet west of the northeast corner of sec. 26, T. 18N, R. 9W latitude 35 degrees, 46

minutes, 02 seconds and longitude 107 degrees, 45 minutes, 21 seconds.

The surface is covered by 30 percent cobbles, 20 percent channers and 30 percent stones.

A—0 to 3 inches; light yellowish brown (2.5Y 6/4) extremely cobbly clay loam, light olive brown (2.5Y 5/4) moist; thin surface crust; weak fine and medium granular structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine irregular pores; 30 percent cobbles, 20 percent channers, 30 percent stones; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary.

2BC—3 to 15 inches; dark grayish brown (2.5Y 4/2) clay, very dark grayish brown (2.5Y 3/2) moist, with light olive brown (2.5Y 5/4) surface material occurring along cracks and ped faces; moderate coarse subangular blocky structure parting to moderate fine and medium subangular blocky; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine and few medium roots; few very fine and fine irregular pores; 1 cm wide vertical cracks extend from 5 to 13 inches; common soft shale fragments; slightly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.

2Cr—15 inches; gypsiferous, noncalcareous shale with common fine and medium seams of secondary gypsum crystals occurring in the top 3 inches and primary gypsum crystals occurring below.

#### Range in Characteristics

Particle-size control section: 40 to 60 percent clay, 10

to 25 percent rock fragments

Depth to paralithic contact: 4 to 20 inches to gypsiferous, noncalcareous shale

Salinity: EC of 0 to 4 mmhos/cm

Calcium carbonate equivalent: 1 to 5 percent

Gypsum: 1 to 5 percent

Reaction: moderately to very strongly alkaline

A horizon:

Hue: 2.5Y or 10YR

Value: 4 to 6 dry, 3 to 5 moist

Chroma: 2 to 4

Rock fragments: 50 to 85 percent total; 5 to 30 percent stones, 5 to 30 percent cobbles, and 15 to 65 percent channers. All fragments are sandstone.

Sodicity: SAR of 2 to 5

BC or C horizons: Hue: 2.5Y or 10YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 2 to 4

Rock fragments: 0 to 20 percent total; 0 to 10 percent cobbles, 0 to 20 percent channers. All fragments are sandstone.

Sodicity: SAR of 5 to 13

### **Hosta Series**

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Haplustalfs
Depth class: Very deep
Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley sides and drainageways Parent material: Fan alluvium derived from sandstone

and shale

Slope range: 1 to 5 percent Elevation: 6,800 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Hosta loam, in an area of mapping unit 360, Hosta-Concho association, 0 to 5 percent slopes; McKinley County, New Mexico; Horsehead Canyon Quadrangle; 400 feet north and 2,600 feet west of the southeast corner of sec. 5, T. 10 N., R. 17 W.; latitude 35 degrees, 7 minutes, 12 seconds and longitude 108 degrees, 39 minutes, 11 seconds.

- A—0 to 2 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; many fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt—2 to 4 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft friable, sticky and plastic; many very fine and common fine roots; common fine irregular pores; few faint bridges of clay films; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Btk1—4 to 11 inches; dark yellowish brown (10YR 4/4) clay loam, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and few fine and medium roots; common fine irregular pores; many prominent clay films on faces of peds; slightly effervescent; few fine filaments and masses of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.

Btk2—11 to 24 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist;

strong medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and few fine roots; common fine irregular pores; common prominent clay films on faces of peds; strongly effervescent; common fine filaments and masses of calcium of carbonate; slightly alkaline (pH 7.8); clear smooth boundary.

- Btk3—24 to 37 inches; dark yellowish brown (10YR 4/4) clay, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine irregular pores; common prominent clay films on faces of peds; slightly effervescent; few fine masses of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.
- Btk4—37 to 51 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; common distinct clay films on faces of peds; slightly effervescent; few fine masses of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.
- Bk—51 to 65 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; strongly effervescent; common fine filaments of calcium carbonate; slightly alkaline (pH 7.8).

# Range in Characteristics

Particle-size control section: 35 to 55 percent clay Reaction: neutral to slightly alkaline in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Hue: 10YR or 2.5Y

Value: 4 to 6 dry, 3 or 4 moist Chroma: 3 or 4 dry, 2 to 4 moist

Rock fragments: 0 to 5 percent sandstone gravel

Bt horizons:

Hue: 7.5YR to 2.5Y

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist

Texture: clay loam, clay, or sandy clay loam Rock fragments: 0 to 5 percent sandstone gravel

Btk and Bk horizons: *Hue:* 7.5YR to 2.5Y

Value: 4 or 5 dry, 3 or 4 moist Chroma: 4 or 5 dry, 3 to 6 moist

Texture: sandy clay loam, clay loam, or clay Calcium carbonate equivalent: 1 to 5 percent

#### **Huerfano Series**

Taxonomic class: Loamy, mixed, superactive, mesic,

shallow Typic Natrargids

Depth class: Shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors and cuestas Parent material: Alluvial material derived from

sandstone and shale Slope range: 1 to 5 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

#### **Typical Pedon**

Huerfano loam, in an area of mapping unit 116, Fajada-Huerfano-Benally complex, 1 to 5 percent slopes; McKinley County, New Mexico; Seven Lakes NW Quadrangle; 260 feet east and 660 feet north of the southwest corner of sec. 3, T. 19 N., R. 10 W.; latitude 35 degrees, 54 minutes, 01 second and longitude 107 degrees, 53 minutes, 39 seconds.

A—0 to 2 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; few very fine irregular pores; 10 percent gravel; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Btkn—2 to 17 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium columnar structure; hard, firm, sticky and plastic; few fine and very fine roots; common very fine irregular pores; common prominent clay films on faces of peds and lining pores; 5 percent gravel; strongly effervescent; few fine masses of calcium carbonate; very strongly alkaline (pH 9.6); clear wavy boundary.

2Cr—17 inches; gypsiferous shale.

## Range in Characteristics

Particle-size control section: 18 to 35 percent clay Depth to a paralithic contact: 10 to 20 inches to shale

A horizon:

Hue: 10YR or 2.5Y Value: 4 or 5 moist Chroma: 3 or 4 moist Rock fragments: 5 to 20 percent sandstone and

siderite gravel

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 15 to 30

Calcium carbonate: 1 to 5 percent Reaction: moderately or strongly alkaline

Btn horizon:

Hue: 10YR or 2.5Y Value: 3 to 6 moist Chroma: 2 to 4 moist

Texture: clay loam or sandy clay loam

Rock fragments: 0 to 15 percent sandstone and

siderite gravel

Salinity: EC of 4 to 16 mmhos/cm

Sodicity: SAR of 15 to 40

Calcium carbonate: 1 to 10 percent

Reaction: moderately to very strongly alkaline

### Kimnoli Series

Taxonomic class: Loamy, mixed, active, mesic Lithic

Haplargids

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 6 percent Elevation: 6,000 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

### **Typical Pedon**

Kimnoli fine sandy loam, in an area of mapping unit 100, Norkiki-Kimnoli complex, 1 to 8 percent slopes; McKinley County, New Mexico; Nose Rock Quadrangle; 2,064 feet west and 2,064 feet south of the northeast corner of sec. 18, T. 20 N., R. 11 W.; latitude 35 degrees, 58 minutes, 02 seconds and longitude 108 degrees, 02 minutes, 42 seconds.

A—0 to 2 inches; dark yellowish brown (10YR 4/4) fine sandy loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; many fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Bt—2 to 7 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common

fine and very fine roots; common fine irregular pores; few faint clay films bridging sand grains; neutral (pH 7.2); clear smooth boundary.

Btk—7 to 14 inches; strong brown (7.5YR 4/6) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; many fine irregular pores; common distinct clay films on faces of peds and bridging sand grains; 5 percent gravel and 5 percent cobbles; strongly effervescent; common fine irregular masses of calcium carbonate; slightly alkaline (pH 7.8); abrupt smooth boundary.

2R—14 inches; sandstone.

### **Range in Characteristics**

Particle-size control section: 20 to 30 percent clay and

greater than 45 percent sand

Depth to lithic contact: 10 to 20 inches to sandstone Calcium carbonate equivalent: 0 to 15 percent

Rock fragments: 0 to 10 percent total; 0 to 5 percent gravel; 0 to 5 percent cobbles. All fragments are sandstone.

Reaction: neutral to slightly alkaline

A horizon:

Hue: 7.5YR or 10YR

Value: 4 through 6 dry; 3 through 4 moist

Chroma: 3 to 6 moist

Bt horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 to 6 dry and moist

Texture: sandy loam or sandy clay loam

#### **Knifehill Series**

Taxonomic class: Fine, mixed, superactive, mesic

Pachic Argiustolls

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors and valley sides Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 1 to 5 percent Elevation: 6,900 to 7,500 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Knifehill loam, in an area of mapping unit 354, Knifehill loam, 1 to 5 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 2,500 feet east and 200 feet north of the southwest corner of sec 10. T. 9 N., R. 17 W.; latitude 35 degrees, 01 minute, 04 seconds and longitude 108 degrees, 37 minutes, 06 seconds.

- A—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable, slightly sticky and nonplastic; common fine and many very fine roots; many medium vesicular pores; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bw—2 to 6 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and many very fine roots; common fine irregular pores; neutral (pH 7.2); clear smooth boundary.
- Bt1—6 to 11 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong medium subangular blocky structure; slightly hard, friable, sticky and plastic; few medium and common fine and very fine roots; common fine irregular pores; common distinct clay films on faces of peds and lining pores; neutral (pH 7.2); clear smooth boundary.
- Bt2—11 to 26 inches; very dark grayish brown (10YR 3/2) clay, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common fine and very fine roots; few fine tubular pores; many prominent clay films on faces of peds and lining pores; neutral (pH 7.2); abrupt smooth boundary.
- Btk—26 to 35 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; weak medium angular blocky structure; hard, firm, very sticky and very plastic; few medium and very fine roots; few very fine irregular pores; few faint clay films on faces of peds; strongly effervescent; few very fine irregular filaments and masses of calcium carbonate; 1 percent calcium carbonate equivalent; slightly alkaline (pH 7.4); clear smooth boundary.
- Bk—35 to 65 inches; yellowish brown (10YR 5/4) clay, dark grayish brown (10YR 4/2) moist; massive; hard, firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; strongly effervescent; few very fine irregular filaments and

masses of calcium carbonate; 4 percent calcium carbonate equivalent; slightly alkaline (pH 7.8).

### Range in Characteristics

Particle-size control section: 35 to 50 percent clay

Mollic epipedon: 20 to 40 inches thick

A horizon:

Hue: 10YR or 7.5YR Value: 4 or 5 dry Chroma: 2 or 3

Reaction: neutral or slightly alkaline

Bt horizon:

Hue: 10YR or 7.5YR Value: 3 to 5 dry Chroma: 2 or 3

Texture: clay loam or clay

Reaction: neutral or slightly alkaline

Bk horizon:

Value: 3 or 4 moist Chroma: 2 to 4 moist Texture: clay loam or clay

Calcium carbonate equivalent: 1 to 15 percent Reaction: slightly to moderately alkaline

#### **Kwakina Series**

Taxonomic class: Sandy, mixed, mesic Ustic

Torrifluvents

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Valley sides and valley floors

Parent material: Fan and stream alluvium derived from sandstone

Slope range: 0 to 2 percent Elevation: 6,000 to 7,300 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### **Typical Pedon**

Kwakina loamy fine sand, in an area of mapping unit 51, Kwakina loamy fine sand, 0 to 2 percent slopes; McKinley County, New Mexico; Zuni Quadrangle; 1,500 feet west and 1,300 feet north of the southeast corner of sec. 17, T. 9 N., R. 18 W.; latitude 35 degrees, 00 minutes, 54 seconds and longitude 108 degrees, 45 minutes, 18 seconds.

A—0 to 7 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; weak fine granular structure; loose, loose, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; strongly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

- C1—7 to 11 inches; yellowish brown (10YR 5/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; massive; hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.
- C2—11 to 23 inches; brown (10YR 5/3) fine sand, brown (10YR 5/3) moist; single grain; loose, loose, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.
- C3—23 to 33 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine irregular pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary.
- C4—33 to 53 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, loose, nonsticky and nonplastic; few very fine roots; few fine irregular pores; violently effervescent; strongly alkaline (pH 8.8); gradual smooth boundary.
- Ck—53 to 65 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, loose, nonsticky and nonplastic; few very fine roots; few fine irregular pores; violently effervescent; few very fine masses of calcium carbonate; strongly alkaline (pH 8.8).

## **Range in Characteristics**

Particle-size control section: 5 to 18 percent clay and greater than 40 percent sand

Reaction: slightly to strongly alkaline

A horizon:

Hue: 2.5YR to 10YR

Value: 3 to 6 Chroma: 3 to 8

Calcium carbonate equivalent: 0 to 5 percent

Salinity: EC of 0 to 2 mmhos/cm

C horizons:

Hue: 2.5YR to 10YR

Value: 3 to 6 Chroma: 3 to 8

Texture: stratified layers of loamy fine sand, loamy sand, fine sand, sand, sandy loam, fine sandy loam, and silt loam.

Calcium carbonate equivalent: 5 to 10 percent

Salinity: EC of 1 to 2 mmhos/cm

#### Lavodnas Series

Taxonomic class: Loamy, mixed, superactive, mesic,

shallow Leptic Haplogypsids

Depth class: Shallow Drainage class: Well drained

Permeability: Slow

Geomorphic position: Hills and ridges

Parent material: Slope alluvium derived from shale

Slope range: 2 to 15 percent Elevation: 6,600 to 7,200 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

### **Typical Pedon**

Lavodnas loam, in an area of mapping unit 22, Querencia-Lavodnas association, 2 to 15 percent slopes; McKinley County, New Mexico; Tinian Quadrangle; 1,200 feet west and 2,200 feet south of the northeast corner of sec. 2, T. 18 N., R. 5 W.; latitude 35 degrees, 49 minutes, 19 seconds and longitude 107 degrees, 19 minutes, 55 seconds.

- A—0 to 3 inches; light yellowish brown (2.5Y 6/4) gypsiferous loam, olive brown (2.5Y 4/4) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; few fine and common very fine roots; common very fine irregular pores; strongly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.
- By1—3 to 9 inches; pale yellow (2.5Y 7/4) gypsiferous clay loam, olive brown (2.5Y 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few medium and common fine and very fine roots; common very fine irregular pores; 2 percent gravel; many medium clusters of gypsum crystals; strongly effervescent; slightly alkaline (pH 7.4); clear smooth boundary.
- By2—9 to 13 inches; light yellowish brown (2.5Y 6/4) gypsiferous clay, olive brown (2.5Y 4/4) moist; massive; hard, friable sticky and plastic; few fine and common very fine roots; common very fine irregular pores; 5 percent gravel; common large clusters of gypsum crystals; slightly effervescent; neutral (pH 7.2); gradual smooth boundary.

Cr—13 to 28 inches; gypsiferous shale and sandstone. 2R-28 inches; sandstone.

### Range in Characteristics

Particle-size control section: 18 to 35 percent clay

Depth to a paralithic contact: 10 to 20 inches to

gypsiferous shale

Calcium carbonate equivalent: 1 to 5 percent Reaction: slightly to moderately alkaline

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry, 4 or 5 moist

Chroma: 4 or 6 moist

Rock fragments: 0 to 5 percent sandstone gravel

By horizon:

Value: 5 to 7 dry; 4 or 5 moist

Chroma: 2 or 4 moist Texture: clay loam or clay Gypsum: 10 to 35 percent

Rock fragments: 0 to 5 percent sandstone gravel

# Ligocki Series

Taxonomic class: Fine, mixed, superactive, frigid

Typic Haplustalfs Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley sides

Parent material: Fan alluvium derived from sandstone,

shale, and granite Slope range: 1 to 5 percent Elevation: 7,700 to 8,000 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

### **Typical Pedon**

Ligocki fine sandy loam, in an area of mapping unit 411, Ligocki-Robolata complex, 1 to 5 percent slopes; McKinley County, New Mexico; Page Quadrangle; 700 feet north and 500 feet west of the southeast corner of sec. 32, T. 13 N., R. 15 W.; latitude 35 degrees, 18 minutes, 31 seconds and longitude 108 degrees, 26 minutes, 35 seconds.

- A—0 to 3 inches; brown (7.5YR 5/2) fine sandy loam, dark brown (7.5YR 3/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; neutral (pH 7.2); abrupt smooth boundary.
- AB—3 to 9 inches; brown (7.5YR 5/2) fine sandy loam, dark brown (7.5YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; neutral (pH 7.2); clear smooth boundary.

Bt1—9 to 20 inches; reddish brown (5YR 4/4) clay, dark reddish brown (5YR 3/4) moist; strong fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine, fine, and few medium roots; few fine and medium irregular pores; many prominent clay films on faces of peds; slightly alkaline (pH 7.4); abrupt wavy boundary.

2Btk1—20 to 30 inches; red (2.5YR 5/6) clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; few very fine irregular pores; 4 percent gravel; many prominent clay films on faces of peds; strongly effervescent; common fine masses and concretions of calcium carbonate; 10 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear wavy boundary.

2Btk2—30 to 48 inches; red (2.5YR 5/6) gravelly sandy clay loam, red (2.5YR 4/6) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; 20 percent gravel-sized limestone fragments; common distinct clay films on faces of peds; slightly effervescent; few very fine masses and concretions of calcium carbonate; calcium carbonate equivalent 11 percent; moderately alkaline (pH 8.2); clear wavy boundary.

3Btk3—48 to 70 inches; red (2.5YR 5/6) sandy clay loam, red (2.5YR 4/6) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few distinct clay films bridging sand grains; very slightly effervescent; few very fine masses of calcium carbonate; 5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8).

# Range in Characteristics

Particle-size control section: 35 to 50 percent clay

A and AB horizons: Hue: 7.5YR

Value: 4 or 5 dry, 3 moist

Chroma: 2 or 3

Textures: fine sandy loam or silt loam

Rock fragments: 0 to 5 percent gravel. All fragments

are granite, sandstone, or limestone.

Reaction: neutral

Bt horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6 Texture: clay Rock fragments: 0 to 5 percent gravel. All fragments are granite, sandstone, or limestone.

Reaction: slightly alkaline

Btk horizon:

Hue: 2.5YR or 5YR Value: 5 or 6 dry, 4 moist

Chroma: 6

Textures: clay loam or sandy clay loam

Rock fragments: 0 to 20 percent gravel. All fragments

are granite, sandstone, or limestone.

Calcium carbonate equivalent: 5 to 15 percent

Reaction: moderately alkaline

# **Lockerby Series**

Taxonomic class: Fine, smectitic, mesic Ustertic

Haplocambids

Depth class: Moderately deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Hills and ridges

Parent material: Residuum derived from shale

Slope range: 5 to 15 percent Elevation: 6,500 to 7,200

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

### **Typical Pedon**

Lockerby silty clay loam, in an area of mapping unit 338, Zyme-Lockerby association, 5 to 35 percent slopes; McKinley County, New Mexico; Pinedale Quadrangle; about 1,950 feet east and 450 feet south of the northwest corner of sec. 27, T. 16 N., R. 15 W. latitude 35 degrees, 35 minutes, 35 seconds and longitude 108 degrees, 24 minutes, 27 seconds.

A—0 to 1 inches; light olive brown (2.5Y 5/4) silty clay loam, olive brown (2.5Y 4/4) moist; weak very fine granular structure; soft, very friable, moderately sticky and moderately plastic; few very fine roots; 5 percent gravel; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw—1 to 11 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; weak very fine subangular blocky structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; few to many pressure faces; 1 percent gravel; very slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bss—11 to 15 inches; light olive brown and dark grayish brown (2.5Y 5/4) and (2.5Y 4/2) clay, olive

brown and very dark grayish brown (2.5Y 4/4) and (2.5Y 3/2) moist; weak fine subangular blocky structure; very hard, very firm, very slightly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

Bssy—15 to 26 inches; light olive brown and dark grayish brown (2.5Y 5/4) and (2.5Y 4/2) clay, olive brown and very dark grayish brown (2.5Y4/4) and (2.5Y 3/2) moist; weak fine subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few non-intersecting slickensides; many very fine and fine masses of gypsum; non-effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Cr-26 inches; shale.

### Range in Characteristics

Particle-size control section: 40 to 50 percent clay Depth to paralithic contact: 20 to 40 inches Vertic features: pressure faces and slickensides Calcium carbonate equivalent: 1 to 5 percent Reaction: slightly to moderately alkaline

A horizon:

Hue: 2.5Y or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4, dry and moist

Textures: silty clay loam or clay loam

Bw horizon:

Hue: 2.5Y or 10YR

Value: 5 to 6 dry, 4 to 5 moist Chroma: 3 or 4, dry and moist Textures: clay or silty clay

Bss and Bssy horizon: Hue: 2.5Y or 10YR

Value: 4 to 6 dry, 3 to 5 moist Chroma: 2 to 4, dry and moist Textures: clay or silty clay

### **Marianolake Series**

Taxonomic class: Fine-loamy, mixed, active, mesic

Ustic Haplargids

Depth class: Very Deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Valley sides, mesas, cuestas,

and drainageways

Parent material: Slope and fan alluvium derived from

sandstone and shale Slope range: 1 to 8 percent Elevation: 6,200 to 7,300 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches Frost-free period: 120 to 140 days

031-1166 period. 120 to 140 days

### **Typical Pedon**

Marianolake fine sandy loam, in an area of mapping unit 208, Marianolake fine sandy loam, 1 to 8 percent slopes; McKinley County, New Mexico; Casamero Lake Quadrangle; about 1,000 feet west and 1,500 feet south of the northeast corner of sec. 17, T. 15 N., R. 11 W.; latitude 35 degrees, 32 minutes, 05 seconds and longitude 108 degrees, 01 minutes, 02 seconds.

- A—0 to 2 inches; light olive brown (2.5Y 5/3) fine sandy loam, olive brown (2.5Y 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; 3 percent gravel; very slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Bt1—2 to 8 inches; light olive brown (2.5Y 5/4) loam, olive brown (2.5Y 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; 1 percent gravel; few faint clay films on faces of peds; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Bt2—8 to 14 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; strong very fine and fine subangular blocky structure; hard, firm, sticky and plastic; common very fine roots; common very fine irregular pores; 1 percent gravel; many distinct clay films on faces of peds; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- Bt3—14 to 24 inches; light olive brown (2.5Y 5/4) fine sandy loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic parting to moderate very fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine roots; few very fine irregular pores; 2 percent gravel; very few pockets of remnant alluvial stratification; few faint clay films on faces of peds; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.
- Bk—24 to 39 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, olive brown (2.5Y 5/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; many very fine irregular pores; very few pockets of remnant alluvial stratification; slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.
- C—39 to 70 inches; light olive brown (2.5Y 5/4) loamy

sand, olive brown (2.5Y 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 18 to 34 percent clay Calcium carbonate equivalence: 0 to 10 percent.

Gypsum percent: 0 to 2 percent

Rock fragments: 0 to 10 percent gravel. All fragments are sandstone.

Reaction: slightly alkaline in the surface to moderately alkaline in the subsoil

A horizon:

Hue: 2.5Y or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist Textures: loam or fine sandy loam

Bt or Btk horizons: Hue: 2.5Y or 10YR

Value: 4 or 5 dry, 3 to 5 moist Chroma: 2 to 4 dry or moist

Texture: sandy clay loam, loam, silt loam, silty clay,

silty clay loam, or clay loam.

BC and C horizons:

Hue: 2.5Y

Value: 4 or 5 dry and moist Chroma: 2 to 4 dry and moist

Textures: loamy sand, fine sandy loam, or loam

### **Mcorreon Series**

Taxonomic class: Fine, smectitic, mesic Calcidic

Argiustolls

Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava Plateaus

Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope range: 2 to 40 percent Elevation: 6,500 to 8,600 feet

Mean annual air temperature: 47 to 53 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

#### Typical Pedon

Mcorreon loam, in an area of mapping unit 395, Cabezon-Mcorreon complex, 2 to 8 percent slopes; McKinley County, New Mexico; Cerro Parido Quadrangle; 11,300 feet south and 1,600 feet west of the southeast corner of sec. 26, T. 16 N., R. 5 W.; latitude 35 degrees, 33 minutes, 07 seconds and longitude 107 degrees, 19 minutes, 50 seconds.

The surface is covered by about 10 percent gravel, 2 percent cobbles, and 1 percent stones.

- A—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine and medium vesicular pores; 10 percent gravel, 2 percent cobbles, and 1 percent stones; neutral (pH 7.2); clear smooth boundary.
- Bt1—2 to 13 inches; very dark grayish brown (10YR 3/2) clay, dark brown (7.5YR 3/2) moist; strong fine angular blocky structure; hard, firm, sticky and plastic; many very fine and fine, and few medium roots; common fine tubular pores; many prominent clay films on faces of peds; 2 percent gravel; neutral (pH 7.2); clear smooth boundary.
- Bt2—13 to 19 inches; dark brown (7.5YR 3/3) clay, dark brown (7.5YR 3/2) moist; moderate medium prismatic parting to moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many prominent clay films on faces of peds; 10 percent gravel, 2 percent cobbles; slightly alkaline (pH 7.4); gradual irregular boundary.
- Btk—19 to 27 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds; 5 percent gravel; violently effervescent; 37 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.
- Bk—27 to 70 inches; pinkish gray (7.5YR 7/2) clay loam, pinkish gray (7.5YR 6/2) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; common fine irregular pores; 5 percent gravel and 1 percent cobbles; violently effervescent; 43 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

R—70 inches; Basalt bedrock.

#### **Range in Characteristics**

Particle-size control section: 35 to 60 percent clay Depth to calcic horizon: 15 to 40 inches Depth to lithic contact: 60 to 80 inches to basalt

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 2 or 3 moist Chroma: 2 or 3 dry or moist

Textures: loam, clay loam, or silty clay loam

Rock fragments: 0 to 60 percent total; 10 to 60 percent gravel, 0 to 40 percent cobbles, 0 to 1 percent stones. Rock fragments are basalt.

Reaction: neutral

Bt horizon

Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 3 or 4 moist Chroma: 2 to 4 dry or moist Textures: clay loam or clay

Rock fragments: 0 to 15 percent total; 0 to 10 percent gravel, 0 to 5 percent cobbles. Rock fragments are

Reaction: neutral to slightly alkaline

Btk and Bk horizons: Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 3 or 4 moist Chroma: 2 to 4 dry or moist Textures: clay loam or clay

Rock fragments: 0 to 15 percent total; 0 to 10 percent gravel, 0 to 5 percent cobbles. Rock fragments are basalt.

Calcium carbonate equivalent: 15 to 45 percent Reaction: Slightly to moderately alkaline

### **Mentmore Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Cuestas, drainageways, and

valley sides

Parent material: Slope and fan alluvium derived from

sandstone and shale Slope range: 1 to 8 percent Elevation: 6,100 to 7,200 feet

Mean annual air temperature: 45 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Mentmore fine sandy loam, in an area of mapping unit 242, Gish-Mentmore complex, 1 to 8 percent slopes; McKinley County, New Mexico; Gallup East Quadrangle; 2,100 feet west, 1,400 feet north of the southeast corner sec. 21, T. 16 N., R. 17 W.; latitude 35 degrees, 35 minutes, 58 seconds and longitude 108 degrees, 38 minutes, 30 seconds.

- A—0 to 2 inches; light olive brown (2.5Y 5/4) fine sandy loam, olive brown (2.5Y 4/4) moist; weak medium subangular blocky parting to weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; slightly alkaline (pH 7.6); abrupt smooth boundary (2 to 4 inches thick).
- Bt1—2 to 4 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; strong very fine subangular blocky structure; hard, firm, sticky and plastic; many very fine roots; few very fine irregular pores; few faint clay films on faces of peds; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bt2—4 to 13 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine roots; few very fine irregular pores; many distinct clay films on faces of peds; very slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- Bt3—13 to 24 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 5/3) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and few medium roots; common very fine irregular pores; common distinct clay films on faces of peds; 2 percent gravel; few krotovinas; common distinct clay films and very fine sand coating faces of peds; very slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- Bk1—24 to 44 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; weak very fine and fine subangular blocky structure; hard, firm, sticky and plastic; common very fine roots; few very fine irregular pores; 1 percent gravel; few pockets of finely stratified material; slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.
- Bk2—44 to 62 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine irregular pores; 3 percent gravel and 1 percent cobbles; few pockets of finely stratified material; slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0).
- By—62 to 70 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; weak fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine roots; 3 inch strata of fine sandy loam;

noneffervescent; common very fine masses and filaments of gypsum; slightly alkaline (pH 7.6).

#### Range in Characteristics

Particle-size control section: 20 to 35 percent clay. The clay content of the Bt1 horizon can range up to 39 percent but is too thin to affect the particle-size family.

Calcium carbonate equivalent: 0 to 2 percent in the upper part and 2 to 10 percent in the lower subsoil Gypsum percent: 0 to 2 percent in the lower subsoil Reaction: slightly alkaline in the upper part and moderately alkaline in the lower subsoil.

A horizon:

Hue: 10YR or 2.5Y

Value: 5 to 7 dry, 3 to 5 moist Chroma: 2 to 4 dry and moist

Rock fragments: 0 to 5 percent sandstone gravel *Texture:* fine sandy loam, loam, or silt loam

Bt and Btk horizons:

Hue: 2.5Y

Value: 4 to 5 dry, 3 to 5 moist Chroma: 2 to 4 dry and moist

Rock fragments: 0 to 5 percent sandstone gravel and 0

to 1 percent cobbles

Texture: loam, sandy clay loam or clay loam

Bk horizon: *Hue:* 2.5Y

Value: 5 or 6 dry, 3 to 5 moist Chroma: 2 to 4 dry and moist Texture: clay loam or loam

Some pedons have By horizons.

# **Mido Series**

Taxonomic class: Mixed, mesic Ustic Torripsamments

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Rapid

Geomorphic position: Valley sides and valley floors Parent material: Eolian material derived from

sandstone

Slope range: 1 to 6 percent Elevation: 6,300 to 6,700 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# **Typical Pedon**

Mido loamy fine sand, in an area of mapping unit 353, Mido loamy fine sand, 1 to 6 percent slopes; McKinley County, New Mexico; Zuni Quadrangle; 2,400 feet north and 100 feet east of sec. 20, T. 10 N., R. 19 W.; latitude 35 degrees, 04 minutes, 55 seconds and longitude 108 degrees, 52 minutes, 22 seconds.

- A—0 to 3 inches; reddish brown (5YR 5/4) loamy fine sand, reddish brown (5YR 4/4) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; common fine and many very fine roots; common very fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- C1—3 to 16 inches; yellowish red (5YR 5/6) loamy fine sand, reddish brown (5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; common very fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8); gradual smooth boundary.
- C2—16 to 65 inches; yellowish red (5YR 5/6) loamy fine sand, yellowish red (5YR 4/6) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; common very fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8).

### Range in Characteristics

Particle-size control section: 2 to 10 percent clay Reaction: slightly or moderately alkaline Calcium carbonate equivalent: 0 to 1 percent

A horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 4 moist

Chroma: 4 to 6 dry and moist

C horizon:

Hue: 2.5YR or 5YR Value: 4 or 5 moist Chroma: 4 or 6 moist

Texture: loamy fine sand or fine sand

### Mirabal Series

Taxonomic class: Loamy-skeletal, mixed, superactive,

nonacid, frigid Typic Ustorthents

Depth class: Moderately deep Drainage class: Well drained Permeability: Moderately rapid

Geomorphic position: Igneous domes of mountains Parent material: Colluvial material over residuum

derived from gneissic-granite Slope range: 5 to 40 percent Elevation: 7,800 to 8,200 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

### **Typical Pedon**

Mirabal extremely gravelly loamy sand, in an area of mapping unit 408, Mirabal-Zuni complex, 1 to 40 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; 2,000 feet east and 1,050 feet south of the northwest corner of sec. 23, T. 13 N., R. 16 W.; latitude 35 degrees, 20 minutes, 50 seconds and longitude 108 degrees, 30 minutes, 07 seconds.

The surface is covered by 60 percent gravel, 15 percent cobbles, and 15 percent stones.

Oi—0 to 1 inches; slightly decomposed pine needles.

A—1 to 2 inches; grayish brown (10YR 5/2) extremely gravelly loamy sand, very dark grayish brown (10 3/2) moist; single grain; soft, loose, nonsticky and nonplastic; common very fine and fine roots; 60 percent gravel, 15 percent cobbles, 15 percent stones; slightly acid (pH 6.4); abrupt smooth boundary.

AC—2 to 6 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; 20 percent gravel, 5 percent cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

C1—6 to 13 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; 40 percent gravel, 10 percent cobbles, 1 percent stones; neutral (pH 6.8); clear wavy boundary.

C2—13 to 30 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; 50 percent gravel, 10 percent cobbles, 10 percent stones; neutral (pH 6.8); abrupt smooth boundary.

R—30 inches; gneissic-granite.

#### Range in Characteristics

Particle size control section: 12 to 18 percent clay with 35 to 80 percent rock fragments

Depth to a lithic contact: 20 to 40 inches

A and AC horizons: Hue: 5YR to 10YR

Value: 4 or 5 dry, 2 or 3 moist

Chroma: 2 or 3

Textures: sandy loam or loamy sand

Rock fragments: 80 percent total; 40 to 60 percent gravel, 5 to 15 percent cobbles, 0 to 15 percent stones. All fragments are gneissic-granite.

Reaction: slightly acid or neutral

C horizons:

Hue: 5YR to 10YR

Value: 5 or 6 dry, 3 or 4 moist

Chroma: 3 or 4

Textures: sandy loam or loamy sand

Rock fragments: 80 percent total: 40 to 60 percent gravel, 5 to 15 percent cobbles, 0 to 15 percent stones. All fragments are gneissic-granite.

Reaction: neutral

# **Moncisco Series**

Taxonomic class: Loamy-skeletal over fragmental, mixed, active, mesic Typic Haplocalcids

Depth class: Very deep

Drainage class: Excessively drained Permeability: Moderate over very rapid Geomorphic position: Hills and ridges

Parent material: Eolian material from sandstone over

residuum from porcelanite Slope range: 2 to 45 percent Elevation: 5,800 to 6,300 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

# **Typical Pedon**

Moncisco extremely channery sandy clay loam in an area of mapping unit 130, Chipeta-Badland-Moncisco complex, 2 to 45 percent slopes; San Juan County, New Mexico; The Pillar 3 NE Quadrangle; latitude 36 degrees, 06 minutes, 27 seconds and longitude 108 degrees, 16 minutes, 57 seconds.

- A—0 to 3 inches; pale brown (10YR 6/3) extremely channery sandy clay loam, dark brown (10YR 4/3) moist; weak medium platy parting to moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; 65 percent channers and 5 percent flagstones; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk—3 to 13 inches; pinkish gray (7.5YR 7/2) extremely channery sandy loam, brown (7.5YR 5/4) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and few medium roots; 75 percent channers and 5 percent flagstones; violently effervescent; common very fine and fine masses of calcium carbonate; slightly alkaline (pH 7.8); clear wavy boundary.
- 2BCky—13 to 27 inches; brownish yellow (10YR 6/6) fragmental, yellowish brown (10YR 5/6) moist;

massive; loose; common very fine and few fine roots; 85 percent channers and 10 percent cobbles; strongly effervescent; few very fine and fine masses of calcium carbonate and gypsum crystals; clear wavy boundary.

2C1—27 to 39 inches; light red (2.5YR 6/6) fragmental, red (2.5YR 5/6) moist; massive; loose; few very fine and fine roots; 80 percent channers and 10 percent cobbles; gradual irregular boundary.

2C2—39 to 60 inches; light red (2.5YR 6/6) fragmental, red (2.5YR 5/6) moist; massive; loose; few very fine roots; 5 percent flagstones.

# **Range in Characteristics**

Particle-size control section: 12 to 25 percent clay in the fine earth fraction and more than 35 percent rock fragments

Soil depth: more than 60 inches to bedrock Depth to fragmental material: 11 to 20 inches Reaction: slightly to moderately alkaline

A horizon: Value: 5 or 6 dry Chroma: 3 or 4

Calcium carbonate equivalence: 1 to 3 percent

Salinity: EC of 0 to 2 mmhos/cm

Rock fragments: 60 to 75 percent total; 0 to 10 percent gravel, 60 to 70 percent channers less than 3 inches long, 0 to 5 percent flagstones less than 10 inches long. All fragments are sandstone and porcelanite.

Bk horizon:

Hue: 5YR or 7.5YR

Value: 6 or 7 dry, 4 or 5 moist

Chroma: 2 to 4

Calcium carbonate equivalent: 5 to 20 percent. (In those profiles with sandy clay loam textures, the carbonates exceed 15 percent, and in those with sandy loam textures, the carbonate percentage may range as low as 5 percent.)

Salinity: EC of 4 to 8 mmhos/cm
Texture: sandy clay loam or sandy loam

Rock fragments: 70 to 85 percent total; 0 to 5 percent gravel; 65 to 75 percent channers with 10 to 15 percent greater than 3 inches long; 0 to 10 percent flagstones with 0 to 5 percent greater than 10 inches long.

2BCky or 2C horizons: *Hue:* 10R to 5YR

Value: 4 to 7 dry, 4 to 6 moist

Chroma: 4 to 8

Calcium carbonate equivalent: 0 to 1 percent

Gypsum content: 0 to 1 percent Salinity: EC of 0 to 2 mmhos/cm

Texture: fragmental material

Rock fragments: 90 to 100 percent total; 0 to 10 percent gravel, 60 to 85 percent channers with 10 to 15 percent greater than 3 inches long, 5 to 20 percent angular cobbles or flagstones with 0 to 5 percent greater than 10 inches long, 0 to 5 percent stones.

Other features: some pedons have horizons of loamy sand or sandy loam below 40 inches.

# **Monpark Series**

Taxonomic class: Fine, smectitic, mesic Leptic

Haplotorrerts

Depth class: Moderately deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Hills and valley sides

Parent material: Slope alluvium over residuum derived

from shale

Slope range: 2 to 8 percent Elevation: 6,000 to 7,000 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# **Typical Pedon**

Monpark silty clay in an area of mapping unit 361 Monpark silty clay, 2 to 8 percent slopes; McKinley County, New Mexico; Zuni Quadrangle; about 2.9 miles southwest of Zuni Pueblo; 1,900 feet east and 1,700 feet south of the northwest corner of Sec. 8, T. 9 N., R. 19 W.; latitude 35 degrees, 01 minutes, 40 seconds and longitude 108 degrees, 54 minutes, 32 seconds.

- A—0 to 4 inches; red (2.5YR 4/6) silty clay, dark red (2.5YR 3/6) moist; strong thin platy structure parting to strong fine granular; soft, very friable, sticky and plastic; common very fine and fine roots; common fine irregular pores; vertical cracks 1 cm wide extend from surface to 20 inches; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- BC—4 to 7 inches; red (2.5YR 4/6) silty clay, dark red (2.5YR 3/6) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots; common fine irregular pores; many pressure faces; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
- 2BCss—7 to 27 inches; red (2.5YR 4/6) clay, dark red (2.5YR 3/6) moist; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few fine irregular pores; 5

percent shale fragments; many pressure faces and few 1- to 2-inch-diameter slickensides; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

2Cr-27 inches; shale.

### Range in Characteristics

Particle-size control section: 40 to 60 percent clay Depth to paralithic contact: 20 to 40 inches to shale Calcium carbonate equivalent: 1 to 10 percent

A horizon:

Hue: 2.5YR or 5YR

Value: 3 to 5 dry, 3 or 4 moist

Chroma: 3 to 6

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 0 to 2

Reaction: slightly or moderately alkaline

BC horizons:

Hue: 2.5YR or 5YR

Value: 3 to 5 dry, 3 or 4 moist

Chroma: 3 to 6

Texture: silty clay or clay Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 2 to 5

Reaction: slightly to strongly alkaline

# **Montillo Series**

Taxonomic class: Fine, mixed, superactive, frigid

Vertic Argiustolls

Depth class: Moderately deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava plateaus and cinder cones Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope range: 2 to 15 percent Elevation: 7,800 to 9,000 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

### **Typical Pedon**

Montillo very gravelly loam in an area of mapping unit 410, Montillo-Tsoodzil complex, 5 to 35 percent slopes; McKinley County, New Mexico; Marquez Quadrangle; latitude 35 degrees, 20 minutes, 05 seconds and longitude 107 degrees, 20 minutes, 07 seconds.

A—0 to 3 inches; reddish brown (5YR4/3), very

gravelly loam, dark reddish brown (5YR3/2) moist; moderate thin and medium platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 25 percent gravel, 10 percent cobbles, and 1 percent stones; slightly acid (pH 6.4); clear smooth boundary.

Bt1—3 to 8 inches; dark reddish brown (5YR3/2), silty clay loam, dark reddish brown (5YR3/2) moist; moderate medium granular structure; hard, firm, sticky and very plastic; many very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds; 5 percent gravel and 2 percent cobbles; neutral (pH 6.6); clear smooth boundary.

Btss1—8 to 15 inches; dark reddish brown (5YR3/2) silty clay, dark reddish brown (5YR3/2) moist; moderate fine and medium angular blocky structure; very hard, very firm, sticky and very plastic; common very fine and fine and few medium roots; common fine tubular pores; few slickensides and pressure faces; few vertical cracks greater than 5 mm wide occur from 8 to 27 inches; many prominent clay films on faces of peds; 5 percent gravel and 5 percent cobbles;

Btss2—15 to 27 inches; dark reddish brown (5YR 3/4) clay, dark reddish brown (5YR 3/3) moist; strong medium angular blocky structure; very hard, very firm, sticky and very plastic; common very fine and fine and few medium roots; common fine tubular pores; common slickensides and pressure faces; few vertical cracks greater than 5 mm wide occur from 8 to 27 inches; many prominent clay films on faces of peds; 5 percent gravel; slightly alkaline (pH 7.4); clear smooth boundary.

slightly alkaline (pH 7.4); clear smooth boundary.

2Bt2—27 to 32 inches; reddish brown (5YR 4/3) very gravelly clay, dark reddish brown (5YR 3/3) moist; strong medium subangular blocky structure; very hard, very firm, sticky and very plastic; common very fine and fine roots; common fine tubular pores; many prominent clay films on faces of peds; 35 percent gravel and 1 percent cobbles; slightly alkaline (pH 7.6); abrupt irregular boundary.

2R—32 inches; basalt with few thin discontinuous coats of calcium carbonate at the upper contact.

#### Range in Characteristics

Particle-size control section: 40 to 60 percent clay with 0 to 30 percent rock fragments

Depth to lithic contact: 20 to 40 inches to basalt Mollic epipedon thickness: 18 to 38 inches

Vertic features: Depth to slickensides and pressure faces is 8 to 13 inches; subsurface vertical cracks occur from 5 to 30 inches

A horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 3 or 4 dry, 2.5 or 3 moist

Chroma: 2 or 3 dry

Rock fragments: 5 to 40 percent total; 5 to 25 percent gravel, 0 to 10 percent cobbles, and 0 to 1 percent stones. All fragments are basalt and cinders.

Reaction: slightly acid to neutral

Bt horizons:

Hue: 5YR or 7.5YR

Value: 3 to 5 dry, 2.5 to 4 moist Chroma: 2 to 6 dry, 1 to 4 moist

Texture: clay, silty clay, or clay loam and silty clay

loam

Rock fragments: 0 to 45 percent total; 0 to 30 percent gravel, 0 to 25 percent cobbles, and 0 to 5 percent stones. All fragments are basalt and cinders.

Note: When a Bt horizon has greater than 35 percent rock fragments, it is either too thin or is too far below the particle size control section to affect the particle size class.

Reaction: neutral to slightly alkaline

# **Morclay Series**

Taxonomic class: Fine, mixed, superactive, frigid

Chromic Haplusterts
Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow

Geomorphic position: Valley sides and floors

Parent material: Slope alluvium over residuum derived

from shale

Slope range: 1 to 5 percent Elevation: 7,400 to 7,800 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# **Typical Pedon**

Morclay silty clay, in an area of mapping unit 413, Morclay silty clay, 1 to 5 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; about 1,500 feet south and 1,100 feet west of the northwest corner of sec. 14, T. 12 N., R. 16 W.; latitude 35 degrees, 16 minutes, 24 seconds and longitude 108 degrees, 30 minutes, 00 seconds.

A—0 to 1 inches; reddish brown (2.5YR 4/3) silty clay, dark reddish brown (2.5YR 3/3) moist; strong very fine granular structure; slightly hard, friable, sticky

and plastic; common very fine and fine roots; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bk1—1 to 5 inches; reddish brown (2.5YR 4/3) clay, dark reddish brown (2.5YR 3/3) moist; moderate thick platy structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; few very fine irregular pores; few pressure faces; few vertical cracks 1 cm wide; slightly effervescent; few very fine masses of calcium carbonate; slightly alkaline (pH 7.6); clear wavy boundary.

Bssk—5 to 48 inches; reddish brown (2.5YR 4/3) clay, dark reddish brown (2.5YR 3/3) moist; wedge-shaped aggregates; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; few very fine irregular pores; many pressure faces and intersecting slickensides; few vertical cracks more than 1 cm wide visible to a depth of 42 inches; slightly effervescent; few very fine masses of calcium carbonate; slightly alkaline (pH 7.6); gradual wavy boundary.

2Ck1—48 to 56 inches; pale red (2.5YR 6/2) clay, weak red (2.5YR 5/2) moist; massive; very hard, very firm, sticky and plastic; few very fine and fine roots; slightly effervescent; few very fine masses of calcium carbonate; slightly alkaline (pH 7.6); gradual wavy boundary.

2Ck2—56 to 70 inches; light gray (5YR 7/1) clay, gray (5YR 6/1) moist; massive; few very fine roots; 70 to 80 percent small (2 to 5 mm) soft shale fragments; slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); gradual irregular boundary.

Cr—70 to 80 inches; dark gray (7.5YR 4/1) Chinle Shale.

## **Range in Characteristics**

Particle-size control section: 40 to 60 percent clay Vertic properties: slight gilgai microrelief on the surface, 0.5 inch-wide vertical cracks extend from the surface to 42 inches or more, pressure faces and slickensides are present below 2 inches.

Salinity: 0-2 mmhos/cm Sodicity: SAR of 0 to 1

Calcium carbonate equivalent: 0 to 1 percent in the surface and 1 to 5 percent in the subsoil Reaction: neutral to moderately alkaline

A horizons:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry and 3 or 4 moist

Chroma: 3 dry and moist

Rock fragments: 0 to 5 percent sandstone gravel

Bssk horizons: Hue: 2.5YR or 5YR Value: 3 or 4 moist Chroma: 3 dry and moist Texture: clay or silty clay

Ck horizons: Hue: 2.5YR or 5YR

Value: 6 or 7 dry, 5 or 6 moist

Chroma: 1 or 2

# **Nahodish Series**

Taxonomic class: Fine, mixed, superactive, mesic

Ustifluventic Haplocambids

Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,100 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Nahodish silt loam, in an area of mapping unit 240, Breadsprings and Nahodish soils, 0 to 2 percent slopes; McKinley County, New Mexico; 900 feet north and 200 feet east of the southwest corner of sec 25, T. 16 N., R. 20 W.; latitude 35 degrees 34 minutes 50 seconds and longitude 108 degrees 55 minutes 05 seconds.

- A—0 to 1 inches; light olive brown (2.5Y 5/3) silt loam, olive brown (2.5Y 4/3) moist; thin surface crust and massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Bw1—1 to 9 inches; light olive brown (2.5Y 5/3) silty clay loam, olive brown (2.5Y 4/3) moist; weak fine subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few very fine irregular pores; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Bw2—9 to 17 inches; light olive brown (2.5Y 5/4) silty clay, olive brown (2.5Y 4/4) moist; weak fine and medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; common very fine irregular pores; few pressure faces and non-intersecting slickensides; very slightly

- effervescent; slightly alkaline (pH 7.8); gradual smooth boundary.
- Bk1—17 to 31 inches; light olive brown (2.5Y 5/4) silty clay, olive brown (2.5Y 4/4) moist; weak fine and medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; common very fine irregular pores; few pressure faces; few very fine masses of calcium carbonate; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Bk2—31 to 36 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few very fine irregular pores; few very fine masses of calcium carbonate; very slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- Bk3—36 to 58 inches; light olive brown (2.5Y 5/4) silt loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine strata of silt loam; few very fine masses of calcium carbonate; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Bky—58 to 70 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; massive; very hard, very firm, moderately sticky and moderately plastic; few very fine roots; few very fine masses of calcium carbonate and gypsum; slightly effervescent; moderately alkaline (pH 8.0).

### Range in Characteristics

Particle-size control section: 35 to 50 percent clay Depth to calcium carbonate: 10 to 30 inches Percent calcium carbonate equivalent: less than 10 percent

Depth to gypsum accumulation: 21 to 58 inches

Percent gypsum: 1 to 10 percent

Reaction: Slightly to moderately alkaline

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 1 to 10.

Thin stratification occurs in some horizons.

A horizon: Hue: 2.5Y

Value: 4 to 6 dry and 4 moist Chroma: 2 or 3 dry and moist Textures: silt loam or silty clay loam

Bw horizons: Hue: 2.5Y

Value: 4 or 5 dry and moist

Chroma: 2 to 4 dry and moist

Textures: clay, silty clay loam, clay loam, or silty clay

Bk and Bky horizons:

Hue: 2.5Y

Value: 4 to 6 dry and 4 or 5 moist Chroma: 3 or 4 dry or moist

Textures: clay, silty clay loam, silt loam, or clay loam

Some pedons are calcareous to the surface and have Bss horizons.

# **Norkiki Series**

Taxonomic class: Fine-loamy, mixed, active, mesic

Typic Haplargids

Depth class: Moderately deep Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 8 percent Elevation: 6,000 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

# **Typical Pedon**

Norkiki loamy sand, in an area of mapping unit 100, Norkiki-Kimnoli complex, 1 to 8 percent slopes; McKinley County, New Mexico; Becenti Lake Quadrangle; 300 feet north and 1,900 feet west of the southeast corner of sec 26. T. 19 N., R. 12 W.; latitude 35 degrees, 50 minutes, 30 seconds and longitude 108 degrees, 04 minutes, 47 seconds.

A—0 to 3 inches; brown (10YR 4/3) loamy sand, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; common fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Bt1—3 to 13 inches; brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and very fine roots; common medium irregular pores; common distinct clay films bridging sand grains and lining pores; slightly alkaline (pH 7.4); clear smooth boundary.

Bt2—13 to 19 inches; strong brown (7.5YR 4/6) sandy loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine and very

fine roots; common medium irregular pores; few faint clay films bridging sand grains; slightly alkaline (pH 7.4); clear smooth boundary.

Btk—19 to 28 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots; common medium irregular pores; common faint clay films bridging sand grains and lining pores; 5 percent cobbles; strongly effervescent; common medium irregular seams of calcium carbonate; slightly alkaline (pH 7.6); abrupt smooth boundary.

2R—28 inches; hard sandstone.

#### Range in Characteristics

Particle-size control section: 18 to 30 percent clay Depth to bedrock: 20 to 40 inches to hard sandstone. Depth to secondary calcium carbonates:13 to 25 inches.

Calcium carbonate equivalence: 0 to 5 percent in the surface and 5 to 15 percent in the subsoil.

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist

Rock fragments: 0 to 10 percent gravel

Bt horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 to 5 moist Chroma: 4 or 6 dry and moist

Texture: sandy clay loam, fine sandy loam, sandy

loam, or clay loam.

Btk and Bk horizons: Hue: 7.5YR or 10YR

Value: 5 to 7 dry, 4 to 6 moist Chroma: 4 or 6 dry and moist

Texture: sandy clay loam, clay loam, or loamy fine

sand

### **Notal Series**

Taxonomic class: Fine, mixed, active, calcareous,

mesic Typic Torriorthents Depth class: Very deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 5,600 to 6,000 feet Mean annual air temperature: 50 to 55 degrees F Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

### **Typical Pedon**

Notal loam, in an area of mapping unit 235, Notal-Hamburn complex, 0 to 2 percent slopes; McKinley County, New Mexico; Mesa Cortada Quadrangle; 7,600 feet south and 1,500 feet west of the southeast corner of sec. 26, T. 16 N., R. 6 W.; latitude 35 degrees, 33 minutes, 43 seconds and longitude 107 degrees, 26 minutes, 20 seconds.

- A—0 to 1 inches; light yellowish brown (2.5Y 6/3) loam, olive brown (2.5Y 4/3) moist; strong medium thick platy structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine vesicular pores; SAR of 10; EC of 1.3 mmhos/cm; slightly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary.
- C—1 to 3 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; moderate medium and thick platy structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; SAR is 8; EC is 0.8 mmhos/cm; slightly effervescent; strongly alkaline (pH 8.8); clear wavy boundary.
- Cn1—3 to 13 inches; olive brown (2.5Y 4/4) sandy clay loam, olive brown (2.5Y 4/3) moist; weak thin and medium platy structure; very hard, very firm, slightly sticky and plastic; common very fine and fine roots; common fine irregular pores; SAR of 15; EC of 1.8 mmhos/cm; slightly effervescent; strongly alkaline (pH 9.0); clear wavy boundary.
- Cn2—13 to 21 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; weak medium and thick platy structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; SAR of 15; EC of 2.0; slightly effervescent; strongly alkaline (pH 8.7); clear smooth boundary.
- Cnkz1—21 to 27 inches; light olive brown (2.5Y 5/3) clay loam, olive brown (2.5Y 4/3) moist; weak medium and thick platy structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; SAR of 11; EC of 5.4 mmhos/cm; trace percent of gypsum; common fine filaments of sodium sulfate; slightly effervescent; very few very fine masses of calcium carbonate; strongly alkaline (pH 8.6); gradual wavy boundary.

Cnkz2—27 to 44 inches; light olive brown (2.5Y 5/3) silty clay, olive brown (2.5Y 4/3) moist; strong fine

and medium subangular blocky structure; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; common fine tubular pores; SAR of 13; EC of 5.3 mmhos/cm; common fine filaments of sodium sulfate; slightly effervescent; very few very fine masses of calcium carbonate; moderately alkaline (pH 8.2); clear wavy boundary.

Cnkz3—44 to 65 inches; light olive brown (2.5Y 5/4) sandy clay loam, olive brown (2.5Y 4/4) moist; weak very thick platy structure; very hard, very firm, sticky and plastic; few very fine and fine roots; few fine irregular pores; SAR of 15; EC of 2.2 mmhos/cm; common fine filaments and masses of sodium sulfate; strongly effervescent; very few very fine masses of calcium carbonate; strongly alkaline (pH 8.8).

## **Range in Characteristics**

Particle-size control section: 35 to 55 percent clay Calcium carbonate equivalent: 0 to 5 percent Rock fragments: 1 to 5 percent gravel Reaction: slightly to very strongly alkaline

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry, 4 or 5 moist

Chroma: 2 or 3

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 5 to 13

C horizons:

Hue: 10YR or 2.5Y

Value: 4 to 6 dry, 4 or 5 moist

Chroma: 3 or 4

Texture: clay loam, sandy clay loam, silty clay, or clay

Salinity: EC of 2 to 16 mmhos/cm

Sodicity: SAR of 8 to 30

Some pedons have thin strata of silt loam, very fine sandy loam, or loam.

#### **Nuffel Series**

Taxonomic class: Fine-silty, mixed, superactive, calcareous, mesic Ustic Torrifluvents

Depth class: Very deep Drainage class: Well drained

Permeability: Moderately slow and slow Geomorphic position: Valley floors

Parent material: Stream alluvium derived from siltstone

and shale

Slope range: 0 to 3 percent Elevation: 6,100 to 6,500 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches Frost-free period: 120 to 140 days

## **Typical Pedon**

Nuffel silt loam, in an area of mapping unit 336, Nuffel-Venadito complex, 1 to 3 percent slopes; McKinley County, New Mexico; Tekapo Quadrangle; 1,200 feet north and 600 feet east of the southwest corner of sec. 16, T. 9 N., R. 20 W.; latitude 35 degrees, 00 minutes, 13 seconds and longitude 108 degrees, 58 minutes, 09 seconds.

- A—0 to 2 inches; light red (2.5YR 6/6) silt loam, reddish brown (2.5YR 4/4) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; few medium and common fine and very fine roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- C1—2 to 10 inches; reddish brown (2.5YR 5/4) sandy loam, reddish brown (2.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium and common fine and very fine roots; few very fine irregular pores; strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.
- C2—10 to 17 inches; reddish brown (2.5YR 5/4) silt loam, reddish brown (2.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- C3—17 to 20 inches; red (2.5YR 4/6) loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; common fine tubular pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- C4—20 to 47 inches; red (2.5YR 5/6) silty clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable slightly sticky and slightly plastic; common fine and very fine roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- 2Ab—47 to 65 inches; red (2.5YR 4/6) silty clay, dark red (2.5YR 3/6) moist; massive; very hard, very firm, very sticky and very plastic; few fine and very fine roots; few very fine irregular pores; violently effervescent; moderately alkaline (pH 8.0).

## Range in Characteristics

Particle-size control section: 18 to 35 percent clay and less than 15 percent fine sand or coarser

Calcium carbonate equivalent: 5 to 10 percent

Sodicity: SAR of 0 to 5

Reaction: slightly to strongly alkaline

A horizon:

Hue: 2.5YR or 5YR

Value: 4 to 6 dry, 3 or 4 moist

Chroma: 4 or 6

C horizons:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6

Texture: Highly stratified layers of silt loam, silty clay loam, and loam in the particle-size control section and fine sandy loam, sandy loam, loam, sandy clay loam, silty clays, and clay loams in the lower C horizons.

### **Nutreeah Series**

Taxonomic class: Fine, mixed, superactive, mesic

Pachic Argiustolls

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,600 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Nutreeah clay loam, in an area of mapping unit 45, Nutreeah clay loam, 0 to 2 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; 800 feet north and 100 feet east of the southwest corner of sec. 24, T. 12 N., R. 17 W.; latitude 35 degrees, 15 minutes, 08 seconds and longitude 108 degrees, 35 minutes, 30 seconds.

- Ap1—0 to 5 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/2) moist; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular and few fine tubular pores; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Ap2—5 to 10 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/2) moist; strong medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many

very fine and fine roots; many very fine irregular and few fine tubular pores; common prominent clay films on faces of peds; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

- Bt1—10 to 16 inches; reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/2) moist; strong coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular and common medium tubular pores; common prominent clay films on faces of peds; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Btk—16 to 24 inches; reddish brown (5YR 4/3) clay, dark reddish brown (5YR 3/2) moist; strong coarse subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots; many very fine irregular and few fine tubular pores; common prominent clay films on faces of peds; slightly effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.
- Btz—24 to 40 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/2) moist; weak medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; few very fine irregular pores; common prominent clay films on faces of peds; common fine clusters of salt crystals; slightly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.
- C—40 to 65 inches; dark brown (10YR 3/3) clay, very dark grayish brown (10YR 3/2) moist; common fine distinct dark yellowish brown (10 YR 3/6) and few fine faint gray mottles; massive; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; few small slickensides and few pressure faces; slightly effervescent; slightly alkaline (pH 7.6).

### Range in Characteristics

Particle-size control section: 35 to 55 percent clay

Depth to salt crystals: 20 to 35 inches

Water table: Intermittent below 40 inches during March

through June

Reaction: Slightly to moderately alkaline

A horizon:

Value: 3 to 5 dry

Chroma: 3 or 4 dry, 2 or 3 moist

Bt horizons:

Value: 3 to 5 dry, 3 or 4 moist Chroma: 2 to 4 dry, 2 or 3 moist Texture: clay loam or clay Salinity: EC of 0 to 2 mmhos/cm in the upper part and

2 to 4 mmhos/cm in the lower part.

Sodicity: SAR of 0 to 5

C horizon:

Hue: 5YR, 7.5YR or 10YR Value: 3 or 4 dry or moist Chroma: 2 to 4 dry or moist Texture: clay loam or clay

Reaction: slightly or moderately alkaline

Salinity: EC of 2 to 8 mmhos/cm

Sodicity: SAR of 0 to 5

### **Orlie Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Aridic Haplustalfs
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow

Geomorphic position: Mesas and cuestas

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 5 percent Elevation: 6,800 to 7,500 feet

Average annual air temperature: 46 to 49 degrees F

Average annual precipitation: 13 to 14 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Orlie fine sandy loam, in an area of mapping unit 30, Orlie-Tinian complex, 1 to 6 percent slopes; McKinley County, New Mexico; Rincon Marquez Quadrangle; 1,200 feet east and 500 feet south of the northwest corner of sec. 7, T. 18 N., R. 5 W.; latitude 35 degrees, 49 minutes, 29 seconds and longitude 107 degrees, 24 minutes, 15 seconds.

- A—0 to 2 inches; brown (10YR 5/3) fine sandy loam, dark brown (7.5YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; many very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- BA—2 to 5 inches; brown (10YR 4/3) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, friable, nonsticky and nonplastic; common fine and very fine roots; common fine irregular pores; neutral; abrupt smooth boundary.
- Bt—5 to 15 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; common medium and fine irregular pores;

many distinct clay films on faces of peds and lining pores; neutral (pH 7.2); abrupt smooth boundary.

Bk1—15 to 36 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, slightly sticky and nonplastic; common fine and very fine roots; common fine irregular pores; strongly effervescent; common fine irregular seams and filaments of calcium carbonate; 10 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk2—36 to 50 inches; brown (10YR 4/3) silty clay loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable sticky and slightly plastic; few fine and very fine roots; common fine irregular pores; slightly effervescent; few very fine seams of calcium carbonate; moderately alkaline (pH 8.4); clear smooth boundary.

Bk3—50 to 62 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine irregular pores; slightly effervescent; few very fine seams of calcium carbonate; slightly alkaline (pH 7.6).

### Range in Characteristics

Particle-size control section: 27 to 35 percent clay Rock fragments: 0 to 5 percent sandstone gravel

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry and moist

Chroma: 3 or 4 moist

Reaction: neutral to slightly alkaline

Bt horizons:

Hue: 7.5YR or 10YR

Value: 3 or 4 moist

Chroma: 4 dry and moist

Texture: clay loam or silty clay loam Reaction: neutral to slightly alkaline

Bk horizons:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 to 5 moist Chroma: 3 or 4 dry, 3 to 6 moist

Texture: sandy clay loam, silty clay loam, or clay loam

Calcium carbonate equivalent: 5 to 10 percent Reaction: slightly alkaline to moderately alkaline

# **Osoridge Series**

Taxonomic class: Clayey, mixed, superactive, frigid Lithic Haplustalfs

Depth class: Shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Cuestas

Parent material: Slope alluvium over residuum derived

from sandstone and shale Slope range: 2 to 15 percent Elevation: 7,500 to 7,900 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# **Typical Pedon**

Osoridge very gravelly clay loam, in an area of mapping unit 418, Asaayi-Osoridge complex, 2 to 15 percent slopes; McKinley County, New Mexico; Page Quadrangle; 2,550 feet west and 700 feet south of the northeast corner of sec. 12, T. 12 N., R. 16 W.; latitude 35 degrees, 17 minutes, 26 seconds and longitude 108 degrees, 28 minutes, 33 seconds.

The surface is covered by 30 percent gravel, 5 percent cobbles, and 5 percent stones.

A—0 to 2 inches; reddish brown (2.5YR 4/3) very gravelly clay loam, dark reddish brown (2.5YR 3/3) moist; weak fine granular structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common fine vesicular pores; 30 percent gravel, 5 percent cobbles, and 5 percent stones; neutral; abrupt smooth boundary.

Bt1—2 to 6 inches; reddish brown (2.5YR 4/4) clay, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; many distinct clay films on faces of peds; 10 percent gravel and 2 percent cobbles; neutral; clear smooth boundary.

Bt2—6 to 18 inches; red (2.5YR 4/6) clay, dark red (2.5YR 3/6) moist; strong moderate and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine irregular pores; many prominent clay films on faces of peds; neutral; abrupt smooth boundary.

R—18 inches; Chinle sandstone.

# Range in Characteristics

Particle-size control section: 35 to 50 percent clay Depth to lithic contact: 10 to 20 inches to sandstone

Reaction: slightly acid or neutral

A horizon:

Hue: 2.5YR to 7.5YR Value: 3 or 4 dry and moist

Chroma: 3 or 4

Rock fragments: 15 to 70 percent total; 15 to 50 percent gravel, 0 to 5 percent cobbles, 0 to 5 percent stones. All fragments are sandstone.

Bt horizon: Hue: 10R to 5YR

Value: 3 or 4 dry and moist

Chroma: 4 or 6

Textures: clay loam or clay

Rock fragments: 0 to 15 percent total; 0 to 15 percent gravel, 0 to 5 percent cobbles. All fragments are

sandstone.

## **Owlrock Series**

Taxonomic class: Loamy-skeletal, mixed, superactive,

frigid Lithic Argiustolls

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderate Geomorphic position: Cuestas

Parent material: Residuum derived from dolomitic

limestone

Slope range: 2 to 8 percent Elevation: 7,200 to 8,200 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# **Typical Pedon**

Owlrock very gravelly loam, in an area of mapping unit 405, Fortwingate-Owlrock complex, 2 to 8 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; 2,200 feet east and 1,250 feet south of the northwest corner of sec. 22, T. 13 N., R. 16 W.; latitude 35 degrees, 20 minutes, 51 seconds and longitude 108 degrees, 31 minutes, 18 seconds.

The surface is covered by 40 percent gravel, 10 percent cobbles, and 5 percent stones.

A—0 to 1 inch; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; few very fine irregular pores; 40 percent gravel, 10 percent cobbles, 5 percent stones; strongly effervescent; 14 percent calcium carbonate equivalent; moderately alkaline (8.2); abrupt smooth boundary.

Btk1—1 to 6 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky

and nonplastic; common very fine, fine, and few medium roots; few very fine irregular pores; few distinct clay films on faces of peds; 10 percent gravel, 50 percent cobbles, 5 percent stones; slightly effervescent; few very fine and fine concretions and masses of calcium carbonate; 10 percent calcium carbonate equivalent; moderately alkaline (8.0); abrupt smooth boundary.

Btk2—6 to 13 inches; brown (7.5YR 5/2) very cobbly loam, dark brown (7.5YR 3/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine, fine, and medium roots; 10 percent gravel, 50 percent cobbles, 5 percent stones; strongly effervescent; common very fine and fine concretions of calcium carbonate; 14 percent calcium carbonate equivalent; moderately alkaline (8.0); abrupt smooth boundary.

R—13 inches; San Andreas limestone.

### Range in Characteristics:

Particle-size control section: 15 to 30 percent clay and

35 to 75 percent rock fragments *Mollic epipedon:* 4 to 15 inches thick

Depth to lithic contact: 7 to 20 inches to limestone Calcium carbonate equivalent: 5 to 15 percent Reaction: slightly to moderately alkaline

A horizon:

Hue: 5YR, 7.5YR, or 10YR

Value: 4 or 5 dry Chroma: 2 or 3

Rock fragments: 50 to 80 percent total; 35 to 40 percent gravel, 10 to 40 percent cobbles, 0 to 5 percent stones. All fragments are limestone.

Btk1 horizon:

Hue: 5YR, 7.5YR, or 10YR

Value: 4 or 5 dry Chroma: 2 through 4

Rock fragments: 35 to 75 percent total; 5 to 10 percent gravel, 25 to 50 percent cobbles, and 5 to 10 percent stones. All fragments are limestone.

Btk2 horizon:

Hue: 5 YR or 7.5YR Value: 4 or 5 dry Chroma: 2 or 3

Textures: loam or clay loam

Rock fragments: 35 to 75 percent total; 5 to 10 percent gravel, 25 to 50 percent cobbles, and 5 to 10 percent stones. All fragments are limestone.

Some pedons have a Bk horizon above the lithic contact.

### Parkelei Series

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Aridic Haplustalfs Depth class: Very deep Drainage class: Well drained

Permeability: Moderate and moderately slow Geomorphic position: Mesas, cuestas, plateaus,

drainageways, and valley sides

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 8 percent Elevation: 6,500 to 8,000 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Parkelei fine sandy loam, in an area of mapping unit 320, Parkelei-Fraguni complex, 1 to 8 percent slopes; McKinley County, New Mexico; Vanderwagon Draw Quadrangle; 1,700 feet north and 2,600 feet west of the southeast corner of sec. 31, T. 12 N., R. 18 W.; latitude 35 degrees, 13 minutes, 25 seconds and longitude 108 degrees, 46 minutes, 08 seconds.

A—0 to 4 inches; brown (7.5YR 5/3) fine sandy loam, dark brown (7.5YR 4/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and few medium roots; few very fine irregular pores; neutral (pH 6.8); abrupt smooth boundary.

Bt1—4 to 18 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine, fine, and few medium roots; few very fine irregular pores; common distinct clay films on faces of peds; neutral (pH 7.0); clear smooth boundary.

Bt2—18 to 28 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few very fine irregular pores; common distinct clay films on faces of peds; slightly alkaline (pH 7.4); clear smooth boundary.

Bt3—28 to 39 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few faint clay films on faces of peds and bridging sand grains; 1 percent sandstone gravel; slightly alkaline (pH 7.6); abrupt smooth boundary.

Btk—39 to 52 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few faint clay films on faces of peds and bridging sand grains; very slightly effervescent; common fine masses of calcium carbonate; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—52 to 70 inches; light reddish brown (5YR 6/4) fine sandy loam, reddish brown (5YR 5/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; very slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 20 to 35 percent clay greater than 35 percent sand

A horizon:

Hue: 7.5YR or 10YR

Value: 3 to 6 dry, 3 or 4 moist Chroma: 3 or 4 dry, 2 or 4 moist

Texture: fine sandy loam, sandy loam, or loam Rock fragments: 0 to 10 percent sandstone gravel or

channers

Reaction: neutral to slightly alkaline

Bt horizons:

Hue: 5YR to 10YR

Value: 4 to 6 dry, 3 or 4 moist

Chroma: 3 to 6

Texture: sandy clay loam or clay loam

Rock fragments: 0 to 10 percent sandstone gravel or

channers

Reaction: neutral to moderately alkaline

Btk or Bk horizons: Hue: 5YR to 10YR

Value: 3 to 6 dry, 4 to 7 moist Chroma: 4 to 6 dry, 2 to 6 moist

Texture: sandy clay loam, clay loam, or sandy loam Rock fragments: 0 to 10 percent sandstone gravel or

channers

Calcium carbonate equivalent: 2 to 10 percent

Reaction: moderately alkaline

Some pedons have a C horizon.

# Penistaja Series

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids Depth class: Very deep Drainage class: Well drained Permeability: Moderate

Geomorphic position: Mesas, cuestas, drainageways,

and valley sides

Parent material: Eolian material and slope alluvium derived from sandstone and shale

Slope range: 1 to 5 percent Elevation: 6,200 to 7,100 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

### **Typical Pedon**

Penistaja sandy loam, in an area of mapping unit 205, Penistaja-Tintero complex, 1 to 10 percent slopes; McKinley County, New Mexico; Bluewater Quadrangle; 700 feet west and 700 feet north of the southeast corner of sec. 32, T. 13 N., R. 10 W.; latitude 35 degrees, 18 minutes, 25 seconds and longitude 107 degrees, 54 minutes, 45 seconds.

- A—0 to 3 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; common very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt1—3 to 12 inches; dark brown (7.5YR 4/4) sandy clay loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few medium and common fine and very fine roots; few fine tubular pores; common distinct clay films bridging sand grains and lining pores; neutral (pH 7.2); clear smooth boundary.
- Bt2— 12 to 19 inches; strong brown (7.5YR 4/6) sandy clay loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; few fine tubular pores; few distinct clay films bridging sand grains and lining pores; neutral (pH 7.2); abrupt smooth boundary.
- Bk1—19 to 40 inches; strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few fine and common very fine roots; few very fine irregular pores; violently effervescent; few medium irregular seams and masses of calcium carbonate; slightly alkaline (pH 8.0); clear smooth boundary.
- Bk2—40 to 65 inches; strong brown (7.5YR 5/6) sandy clay loam; strong brown (7.5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and

nonplastic; few very fine roots; few very fine irregular pores; violently effervescent; few fine irregular seams and filaments of calcium carbonate; slightly alkaline (pH 8.0).

### Range in Characteristics

Particle-size control section: 20 to 35 percent clay and

greater than 40 percent sand

Rock fragments: 0 to 5 percent sandstone gravel

A horizon: Hue: 7.5YR

Value: 5 or 6 dry, 4 or 5 moist

Chroma: 4 or 6

Texture: sandy loam or fine sandy loam Reaction: neutral or slightly alkaline

Bt horizon: Hue: 7.5YR

Value: 4 to 6 dry, 4 or 5 moist

Chroma: 4 or 6

Texture: sandy clay loam or clay loam Reaction: neutral to slightly alkaline

Bk horizon: Hue: 7.5YR

Value: 5 or 6 dry, 4 or 5 moist

Chroma: 4 or 6

Texture: sandy clay loam or fine sandy loam Calcium carbonate equivalent: 1 to 10 percent Reaction: slightly to moderately alkaline

### **Pescado Series**

Taxonomic class: Loamy, mixed, superactive, mesic

Lithic Haplustalfs

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Lava flows on valley floors Parent material: Eolian material derived from

sandstone

Slope range: 1 to 8 percent Elevation: 6,400 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Pescado fine sandy loam, in an area of mapping unit 575, Ramah-Pescado association, 1 to 8 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 600 feet south and 400 feet east of the

northwest corner of sec. 17, T. 10 N., R. 16 W.; latitude 35 degrees, 06 minutes, 10 seconds and longitude 108 degrees, 33 minutes, 20 seconds.

- A—0 to 3 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; neutral (pH 6.8); clear smooth boundary.
- Bt1—3 to 10 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine irregular pores; many prominent clay films bridging sand grains and on faces of peds; 1 percent gravel; neutral (pH 6.8); clear smooth boundary.
- Bt2—10 to 16 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few fine irregular pores; many prominent clay films bridging sand grains and on faces of peds; 1 percent gravel; matrix is very slightly effervescent with a violently effervescent 1-inch layer above the lithic contact with basalt; slightly alkaline (pH 7.4); abrupt smooth boundary.

2R—16 inches; basalt.

# Range in Characteristics

Particle-size control section: 20 to 35 percent clay and greater than 35 percent sand

Depth to bedrock: 7 to 20 inches to basalt

A horizon:

Value: 3 or 4 moist

Rock fragments: 0 to 10 percent basalt gravel

Reaction: neutral

Bt horizons:

Hue: 7.5YR or 5YR

Rock fragments: 0 to 5 percent basalt gravel Textures: sandy clay loam or clay loam Reaction: neutral and slightly alkaline

# **Plumasano Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Aridic Haplustepts

Depth class: Very deep

Drainage class: Somewhat excessive and well drained

Permeability: Moderate or moderately rapid

Geomorphic position: Cuestas, plateaus, valley sides,

hills, and ridges

Parent material: Eolian material and fan and slope alluvium derived from sandstone

Slope range: 2 to 40 percent Elevation: 6,200 to 7,200 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 115 to 135 days

# **Typical Pedon**

Plumasano sandy loam, in an area of mapping unit 561, Flugle-Plumasano association, 2 to 8 percent slopes; Cibola County, New Mexico; Plumasano Basin Quadrangle; 1,900 feet south and 800 feet east of the northwest corner of sec. 10, T. 8 N., R. 19 W.; latitude 34 degrees, 56 minutes, 24 seconds and longitude 108 degrees, 49 minutes, 59 seconds.

- A—0 to 2 inches; dark yellowish brown (10YR 4/4) sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; common very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bw—2 to 11 inches; brown (7.5YR 4/4) sandy loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium and many fine and very fine roots; few very fine tubular pores; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk1—11 to 27 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4) moist; massive; hard, friable, nonsticky and nonplastic; few fine and very fine roots; few fine tubular pores; violently effervescent; common medium filaments, seams and masses of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk2—27 to 43 inches; strong brown (7.5YR 5/6) fine sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine irregular pores; violently effervescent; few medium masses and seams of calcium carbonate; slightly alkaline (pH 7.4); clear smooth boundary.
- Bk3—43 to 53 inches; light reddish brown (5YR 6/4) fine sandy loam, reddish brown (5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; violently effervescent; common medium masses, filaments and seams of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.

Bk4—53 to 65 inches; light brown (7.5YR 6/4) sandy

clay loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; violently effervescent; few medium filaments and masses of calcium carbonate; slightly alkaline (pH 7.6).

## Range in Characteristics

Particle-size control section: 5 to 18 percent clay
Depth to calcium carbonate: 5 to 25 inches
Depth to bottom of cambic: 11 to 24 inches
Reaction: neutral or slightly alkaline in the surface

Reaction: neutral or slightly alkaline in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 3 to 5 moist Chroma: 3 or 4 dry, 2 to 4 moist

Bw horizon:

Hue: 7.5YR or 10YR

Value: 4 or 6 dry, 3 or 4 moist Chroma: 3 or 4 dry, 2 to 6 moist

Texture: sandy loam or fine sandy loam

Bk horizons:

Hue: 5YR, 7.5YR or 10YR Value: 5 or 6 dry, 3 to 5 moist Chroma: 3 to 6 dry, 2 to 4 moist

Texture: sandy loam, fine sandy loam, sandy clay

loam, or loamy sand

Calcium carbonate equivalent: 1 to 15 percent

### **Polich Series**

Taxonomic class: Fine-loamy, mixed, superactive,

frigid Cumulic Haplustolls Depth class: Very deep

Drainage class: Somewhat poorly drained

Permeability: Moderately slow Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone, granite, and limestone

Slope range: 0 to 3 percent Elevation: 7,600 to 8,000 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

### **Typical Pedon**

Polich silt loam, in an area of mapping unit 406, Polich silt loam, 0 to 3 percent slopes; McKinley County, New Mexico; Page Quadrangle; 1,950 feet north and 200 feet west of the southeast corner of sec. 34, T. 13 N.,

R. 15 W.; latitude 35 degrees, 18 minutes, 40 seconds and longitude 108 degrees, 24 minutes, 19 seconds.

- A1—0 to 5 inches; very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; hard, friable, slightly sticky and nonplastic; many very fine and fine roots; slightly effervescent; 5 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- A2—5 to 13 inches; brown (7.5YR 4/2) silt loam, dark brown (7.5YR 3/2) moist; strong medium granular structure; hard, friable, slightly sticky and nonplastic; common fine and medium roots; strongly effervescent; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bw—13 to 23 inches; brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; strong medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; few fine roots; many very fine irregular pores; strongly effervescent; 10 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bk1—23 to 40 inches; dark brown (7.5YR 4/3) clay loam, dark brown (7.5YR 3/3) moist; few very fine distinct yellowish red (5YR 4/6) moist redox concentrations; weak medium subangular blocky structure; hard, firm, sticky and plastic; few medium roots; violently effervescent; common very fine and fine masses and concretions of calcium carbonate; 13 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bk2—40 to 48 inches; brown (5YR 5/3) clay loam, dark brown (5YR 3/3) moist; common very fine distinct yellowish red (5YR 4/6) moist redox concentrations; weak medium subangular blocky structure parting to weak fine granular; hard, firm, sticky and plastic; few fine roots; slightly effervescent; few very fine masses and concretions of calcium carbonate; moderately alkaline (pH 8.0); gradual smooth boundary.
- 2BCk1—48 to 58 inches; reddish brown (5YR 5/4) clay loam, dark reddish brown (5YR 3/4) moist; common very fine and fine distinct yellowish red (5YR 4/6) moist redox concentrations and few very fine manganese concretions; massive; very hard, very firm, very sticky and very plastic; few very fine roots; slightly effervescent; few very fine masses and concretions of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.
- 2BCk2—58 to 70 inches; reddish brown (5YR 5/4) loam, dark reddish brown (5YR 3/4) moist; few

very fine faint yellowish red (5YR 4/6) redox concentrations; massive; hard, firm, slightly sticky and slightly plastic; apparent water table at a depth of 58 inches; slightly effervescent; slightly alkaline (pH 7.8).

# **Range in Characteristics**

Particle-size control section: 25 to 35 percent clay.

Mollic epipedon: 20 to 45 inches thick

Calcium carbonate equivalent: 5 to 15 percent.

Depth to water table: 15 to 60 inches; water table is highest during March and April (after snow melt) and during August and September after the summer rains.

Depth to redox concentrations: 20 to 35 inches; few to common, faint to distinct, yellowish red redox concentrations.

Reaction: Slightly to moderately alkaline

A horizon:

Hue: 7.5YR or 10YR

Value: 2 or 3 moist, 3 to 5 dry

Chroma: 2 or 3

Bw and Bk horizons: Hue: 5YR, 7.5YR or 10YR Value: 3 to 5 dry, 2 or 3 moist

Chroma: 1 to 3

Texture: clay loam, silty clay loam, silt loam, or loam

2BCk horizon: Hue: 5YR to 10YR Value: 3 or 4 moist Chroma: 2 to 4

Texture: clay loam, clay, silty clay loam, or loam

# Querencia Series

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplocambids Depth class: Very deep

Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Drainageways and valley sides Parent material: Fan alluvium derived from sandstone

and shale

Slope range: 2 to 10 percent Elevation: 6,600 to 7,200 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# **Typical Pedon**

Querencia fine sandy loam, in an area of mapping unit

22, Querencia-Lavodnas association, 2 to 15 percent slopes; McKinley County, New Mexico; Tinian Quadrangle; 1,000 feet west and 1,800 feet south of the northeast corner of sec. 2, T. 18 N., R. 5 W.; latitude 35 degrees, 49 minutes, 22 seconds and longitude 107 degrees, 19 minutes, 48 seconds.

A—0 to 2 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, olive brown (2.5Y 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; common very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Bw1—2 to 9 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common fine and many very fine roots; few fine tubular and common very fine irregular pores; violently effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bw2—9 to 15 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; few fine tubular and common very fine irregular pores; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—15 to 42 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine tubular and common very fine irregular pores; 10 percent gravel; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—42 to 65 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, firm, sticky and slightly plastic; few very fine roots; common very fine irregular pores; 10 percent gravel; violently effervescent; few fine irregular filaments and seams of calcium carbonate and coating gravel; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 18 to 35 percent clay Rock fragments: 0 to 10 percent sandstone gravel Calcium carbonate equivalent: 0 to 1 percent in the surface and 1 to 15 percent in the subsoil

A horizon:

Hue: 10YR or 2.5Y Value: 5 or 6 dry, 4 moist Chroma: 4 dry and moist

Reaction: neutral or slightly alkaline

Bw horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry, 4 moist Chroma: 4 dry and moist

Texture: clay loam, sandy clay loam, or loam Reaction: slightly or moderately alkaline

Bk horizon:

Hue: 10YR or 2.5Y Value: 5 or 6 dry, 4 moist Chroma: 2 to 4 dry

Texture: clay loam, sandy clay loam, or loam Reaction: slightly or moderately alkaline

#### **Ramah Series**

Taxonomic class: Fine, mixed, superactive, mesic

Calcidic Haplustalfs

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Lava flows on valley floors Parent material: Eolian and alluvial material derived

from sandstone
Slope range: 1 to 4 percent
Elevation: 6,400 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 100 to 135 days

### **Typical Pedon**

Ramah sandy loam, in an area of mapping unit 575, Ramah-Pescado association, 1 to 8 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 800 feet south and 1,300 feet east of the northwest corner of sec. 17, T. 10 N., R. 16 W.; latitude 35 degrees, 06 minutes, 08 seconds and longitude 108 degrees, 33 minutes, 11 seconds.

- A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; neutral (pH 7.2); clear smooth boundary.
- Bt1—3 to 8 inches; brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; few fine irregular pores; common distinct clay films bridging sand grains; neutral (pH 7.2); clear smooth boundary.
- Bt2—8 to 15 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium subangular blocky

- structure; hard, firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; many prominent clay films bridging sand grains and on faces of peds; neutral (pH 7.2); abrupt smooth boundary.
- Btk—15 to 23 inches; brown (7.5YR 5/4) clay loam, strong brown (7.5YR 4/6) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and few fine roots; few fine irregular pores; many prominent clay films bridging sand grains and on faces of peds; violently effervescent; 9 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bk1—23 to 33 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine irregular pores; violently effervescent; common fine and medium seams and masses of calcium carbonate; 12 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); gradual irregular boundary.
- Bk2—33 to 41 inches; pink (5YR 7/4) clay loam, yellowish red (5YR 5/6) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine irregular pores; violently effervescent; many fine and medium seams, masses and common fine and medium concretions of calcium carbonate; 17 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.
- Bk3—41 to 62 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine irregular pores; violently effervescent; common fine seams and masses of calcium carbonate; 5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

### Range in Characteristics

Particle-size control section: 35 to 40 percent clay and greater than 30 percent sand
Depth to calcic horizon: 25 to 45 inches
Calcium carbonate equivalent: 0 to 15 percent and 15 to 30 percent in the calcic horizon

A horizon:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist

Reaction: neutral

Bt horizons:

Hue: 5YR, 7.5YR, or 10YR Value: 4 or 5 dry, 3, 4, or 6 moist

Chroma: 4 or 5 dry, 3, 4, or 6 moist

Textures: Typically clay loam, with some pedons having thin upper sandy clay loam Bt horizons

Reaction: neutral to slightly alkaline

Bk horizons:

Hue: 5YR, 7.5YR, or 10YR

Value: 4 or 5 dry, 3, 4, or 6 moist

Chroma: 4 or 5 dry, 3, 4, or 6 moist

Reaction: moderately alkaline

# **Rauster Series**

Taxonomic class: Fine, mixed, superactive, frigid

Vertic Argiustolls Depth class: Deep

Drainage class: Well drained Permeability: Very slow

Geomorphic position: Cuestas, hills, and ridges Parent material: Slope alluvium over residuum from

sandstone and shale Slope range: 5 to 35 percent Elevation: 7,100 to 8,000 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# **Typical Pedon**

Rauster clay loam, in an area of mapping unit 409, Rauster-Rock outcrop complex, 5 to 35 percent slopes; McKinley County, New Mexico; Page Quadrangle; about 2,800 feet west and 2,600 feet north of the southeast corner of sec. 14, T. 12 N., R. 16 W.; latitude 35 degrees, 16 minutes, 13 seconds and longitude 108 degrees, 29 minutes, 50 seconds.

A—0 to 1 inches; dark reddish brown (5YR 3/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate very fine granular structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; 2 percent gravel; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt—1 to 5 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/3) moist; strong very fine and fine angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; many very fine, fine, and few medium roots; few very fine irregular pores; few small pressure faces; few vertical cracks 0.25 inches wide; many distinct clay films on faces of peds; slightly alkaline (pH 7.4); clear smooth boundary.

Bssk—5 to 28 inches; weak red (10R 4/2) clay, dusky red (10R 3/2) moist; wedge-shaped aggregates; extremely hard, extremely firm, very sticky and very plastic; common very fine, fine, and few

medium and coarse roots; few very fine irregular pores; many intersecting slickensides; few vertical cracks 0.5 inches wide extending to 27 inches in depth; slightly effervescent; few very fine masses of calcium carbonate; slightly alkaline (pH 7.6); clear wavy boundary.

Bk—28 to 55 inches; weak red (10R 4/2) clay, weak red (10R 4/2) moist; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few very fine irregular pores; few pressure faces; strongly effervescent; few very fine and fine masses of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.

Cr—55 inches; Purple and red shale —Chinle formation.

# **Range in Characteristics**

Particle-size control section: 40 to 50 percent clay Depth to a paralithic contact: 40 to 60 inches Depth to vertic features: 2 to 50 inches Thickness of mollic epipedon: 15 to 35 inches Rock fragments: 0 to 5 percent sandstone, limestone,

and siliceous gravel

Reaction: neutral to slightly alkaline

A horizon:

Hue: 5YR to 10YR

Value: 3 or 4 dry, 3 moist

Chroma: 2 or 3 dry and moist

Bt horizon:

Hue: 2.5YR to 7.5YR

Value: 3 or 4 dry, 2 to 4 moist Chroma: 2 to 4 dry and moist Texture: clay loam or clay

Bssk horizon: Hue: 10R to 5YR

Value: 3 or 4 dry, 3 moist Chroma: 2 to 4 dry and moist

Calcium carbonate equivalent: 1 to 5 percent

Bk or BCk horizons: Hue: 10R to 2.5YR Value: 3 or 4 dry, 3 moist Chroma: 2 to 4 dry and moist

Calcium carbonate equivalent: 1 to 10 percent

### **Razito Series**

Taxonomic class: Mixed, mesic Typic Torripsamments

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Rapid

Geomorphic position: Dunes on mesas, cuestas,

valley sides, and valley floors

Parent material: Eolian material derived from

sandstone

Slope range: 1 to 8 percent Elevation: 5,500 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

# **Typical Pedon**

Razito loamy sand, in an area of mapping unit 115, Razito-Shiprock complex, 3 to 8 percent slopes; McKinley County, New Mexico; Nose Rock Quadrangle; 1,400 feet south and 300 feet east of the northwest corner of sec. 19, T. 20 N., R. 11 W.; latitude 35 degrees, 57 minutes, 15 seconds and longitude 108 degrees, 03 minutes, 18 seconds.

- A—0 to 4 inches; yellowish brown (10YR 5/4) loamy sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, very friable, nonsticky and nonplastic; few fine and very fine roots; many very fine irregular pores; slightly alkaline (pH 7.4); abrupt smooth boundary.
- C1—4 to 15 inches; dark yellowish brown (10YR 4/4) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; many very fine irregular pores; slightly alkaline (pH 7.4); clear smooth boundary.
- C2—15 to 34 inches; yellowish brown (10YR 5/4) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; many very fine irregular pores; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Ck—34 to 65 inches; light yellowish brown (10YR 6/4) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine irregular pores; violently effervescent; few fine irregular masses and filaments of calcium carbonate; slightly alkaline (pH 7.8).

# **Range in Characteristics**

Particle-size control section: 2 to 6 percent clay Salinity: EC of 0 to 2 mmhos/cm

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 4 or 5 moist

Chroma: 4 to 6 moist Reaction: slightly alkaline

C and Ck horizons: Hue: 10YR or 2.5Y

Value: 4 or 5 dry and moist Chroma: 4 to 6 moist

Texture: loamy sand or loamy fine sand Reaction: slightly or moderately alkaline

# **Redpen Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Ustic Haplargids

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Valley sides

Parent material: Eolian and fan alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,000 to 6,500 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Redpen sandy clay loam, in an area of mapping unit 60, Redpen sandy clay loam, 0 to 2 percent slopes; McKinley County, New Mexico; Zuni Quadrangle; 1,000 feet north and 1,200 feet east of the southwest corner of sec. 16, T. 10 N., R. 19 W.; latitude 35 degrees, 05 minutes, 33 seconds and longitude 108 degrees, 51 minutes, 07 seconds.

- Ap—0 to 4 inches; reddish brown (2.5YR 4/4) sandy clay loam, dark reddish brown (2.5YR 3/4) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine irregular pores; violently effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Btk1—4 to 15 inches; reddish brown (2.5YR 4/4) sandy clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium and coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine irregular pores; many prominent clay films bridging sand grains; violently effervescent; few fine irregular filaments of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.
- Btk2—15 to 24 inches; reddish brown (2.5YR 4/4) sandy clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots;

common fine irregular pores; common prominent clay films bridging sand grains; violently effervescent; many medium irregular filaments of calcium carbonate; moderately alkaline (pH 8.4); clear smooth boundary.

Bk1—24 to 52 inches; reddish brown (2.5YR 4/4) sandy clay loam, dark reddish brown (2.5YR 3/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; violently effervescent; many medium irregular masses of calcium carbonate; moderately alkaline (pH 8.4); clear smooth boundary.

Bk2—52 to 65 inches; reddish brown (2.5YR 4/4) clay loam, dark reddish brown (2.5YR 3/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; violently effervescent; few fine irregular filaments of calcium carbonate; moderately alkaline (pH 8.4).

#### Range in Characteristics

Particle-size control section: 27 to 35 percent clay and greater than 40 percent sand

Percent calcium carbonate equivalent: 5 to 10 percent, calcareous in all parts

Reaction: slightly alkaline in the surface and moderately alkaline in the subsoil

Ap or A horizon: Hue: 2.5YR or 5YR Value: 3 or 4 moist Chroma: 4 or 6 moist

Rock fragments: 0 to 5 percent sandstone gravel

Bt or Btk horizon: Value: 3 or 4 moist Chroma: 4 or 6 moist

*Texture:* sandy clay loam or clay loam

Rock fragments: 0 to 10 percent sandstone gravel

Bk horizon: Value: 3 or 4

Chroma: 4 or 6 moist

Texture: sandy clay loam or clay loam

Rock fragments: 0 to 10 percent sandstone gravel

Some pedons have a C horizon with highly stratified, calcareous, silt loam, fine sandy loam, clay loam, or sandy clay loam.

# **Regracic Series**

Taxonomic class: Fine, mixed, superactive, mesic Aridic Paleustalfs

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from shale.

sandstone, and conglomerate Slope range: 2 to 6 percent Elevation: 7,400 to 7,700 feet

Mean annual air temperature: 47 to 53 degrees F

Mean annual precipitation: 13 to 16 inches Frost-free period: 100 to 135 days

## **Typical Pedon**

Regracic gravelly sandy clay loam, in an area of mapping unit 300, Regracic gravelly sandy clay loam, 2 to 6 percent slopes; McKinley County, New Mexico; Pine Canyon Quadrangle; 2,200 feet south and 300 feet west of the northeast corner of sec. 20, T. 13 N., R. 13 W.; latitude 35 degrees, 20 minutes, 36 seconds and longitude 108 degrees, 13 minutes, 46 seconds.

The surface is covered by 30 percent gravel and 1 percent cobbles.

A—0 to 2 inches; brown (7.5YR 5/4) gravelly sandy clay loam, dark brown (7.5YR 3/3) moist; weak fine granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; few fine vesicular pores; 30 percent gravel and 1 percent cobbles; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Bt—2 to 19 inches; reddish brown (2.5YR 4/3) clay, dark reddish brown (2.5YR 3/4) moist; strong fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many prominent clay films on faces of peds; 2 percent gravel; slightly alkaline (pH 7.6);

abrupt smooth boundary.

Btk1—19 to 31 inches; reddish brown (2.5YR 4/3) clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium prismatic structure; very hard, very firm, sticky and plastic; common very fine and fine roots; common fine tubular pores; common distinct clay films coating faces of peds; 2 percent gravel; strongly effervescent; many very fine and fine masses and filaments of calcium carbonate; 8 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

2Btk2—31 to 45 inches; reddish brown (2.5YR 4/3) very gravelly sandy clay, dark reddish brown (2.5YR 3/4) moist; weak very fine and fine subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few fine irregular pores; common distinct clay films on

faces of peds and bridging sand grains; 55 percent gravel; violently effervescent; many very fine and fine masses and filaments, common fine concretions of calcium carbonate and coating rock fragments; 22 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

2Btk3—45 to 50 inches; yellowish red (5YR 5/6) clay loam, yellowish red (5YR 4/6) moist; weak very fine and fine subangular blocky structure; hard, firm, slightly sticky and slight plastic; few very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds and bridging sand grains; 5 percent gravel; strongly effervescent; many very fine and fine masses and filaments, few fine concretions of calcium carbonate and coating rock fragments; 8 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2Btk4—50 to 56 inches; yellowish red (5YR 5/6) very gravelly sandy clay loam, yellowish red (5YR 4/6) moist; weak very fine and fine subangular blocky structure parting to weak very fine granular; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few medium irregular pores; few faint clay films bridging sand grains and coating rock fragments; 55 percent gravel; slightly effervescent; few fine masses and filaments of calcium carbonate; 3 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

2Btk5—56 to 60 inches; reddish brown (2.5YR 5/4) clay loam, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slight plastic; few very fine and fine roots; common fine irregular pores; common faint clay films on faces of peds and bridging sand grains; 5 percent gravel; strongly effervescent; common fine masses and filaments and few fine concretions of calcium carbonate; 6 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

3BCk—60 to 80 inches; reddish brown (5YR 4/4) gravelly sandy loam, dark reddish brown (5YR 3/4) moist; weak very fine and fine granular structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common medium pores; 25 percent gravel; slightly effervescent; few very fine and fine masses of calcium carbonate; 3 percent calcium carbonate equivalent; slightly alkaline (pH 7.8).

# Range in Characteristics

Particle-size control section: 35 to 55 percent clay and

greater than 30 percent sand

Depth to secondary calcium carbonate: 12 to 26 inches Depth to calcic horizon: 15 to 35 inches and 6 to 37

inches thick

A horizon:

Hue: 5YR or 7.5YR Value: 4 or 5 dry Chroma: 3 or 4

Rock fragments: 10 to 40 percent total; 10 to 40 percent gravel; 0 to 1 percent cobbles. All fragments are siliceous, sandstone, and some petrified wood.

Reaction: neutral or slightly alkaline

Bt horizon:

Hue: 2.5YR, 5YR, or 7.5YR

Chroma: 3 or 4 dry

Texture: clay or sandy clay

Rock fragments: 0 to 5 percent siliceous gravel

Reaction: neutral or slightly alkaline

Btk horizon:

Hue: 2.5YR, 5YR, or 7.5YR Value: 4 to 7 dry, 3 to 6 moist

Chroma: 3 to 6

Texture: clay loam, clay, sandy clay, or sandy clay

loam

Rock fragments: 0 to 60 percent siliceous gravel Calcium carbonate equivalent: 3 to 40 percent, with the calcic horizon ranging from 15 to 40

percent

Reaction: slightly or moderately alkaline

BCk horizon (when present): Hue: 2.5YR, 5YR, or 7.5YR Value: 4 to 6 dry, 3 to 5 moist

Chroma: 3 or 4

Texture: sandy loam or fine sandy loam

Rock fragments: 5 to 30 percent gravel and 0 to 1 percent cobbles. All fragments are siliceous. Calcium carbonate equivalent: 0 to 5 percent

Reaction: moderately alkaline

### Rehobeth Series

Taxonomic class: Fine, mixed, superactive, mesic

Chromic Gypsitorrerts

Depth class: Very Deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors

Parent material: Stream alluvium from gypsiferous

shale

Slope range: 0 to 1 percent Elevation: 6,600 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

### **Typical Pedon**

Rehobeth silty clay loam in an area of mapping unit 212, Rehobeth silty clay loam, 0 to 1 percent slopes; McKinley County, New Mexico; Church Rock Quadrangle; T. 15 N., R. 16 W.; latitude 35 degrees, 30 minutes, 12 seconds and longitude 108 degrees, 32 minutes, 11 seconds.

A—0 to 2 inches; reddish brown (2.5YR 4/3) silty clay loam, reddish brown (2.5YR 4/3) moist; moderate very fine granular structure; soft, very friable, sticky and plastic; few very fine roots; few vertical cracks 0.4 inch wide; gypsum >5.0 percent; SAR of 4.3; EC of 0.4 mmhos/cm; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bw—2 to 5 inches; reddish brown (2.5YR 4/3) silty clay loam, reddish brown (2.5YR 4/3) moist; strong very fine granular structure; hard, very firm, moderately sticky and moderately plastic; few very fine roots; common very fine irregular pores; few vertical cracks 0.5 inch wide; gypsum >5.0 percent; SAR of 3.1; EC of 0.4 mmhos/cm; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bss—5 to 12 inches: reddish brown (2.5YR 4/3) clay, reddish brown (2.5YR 4/3) moist; strong medium and coarse wedge-shaped aggregates; extremely hard, extremely firm, very sticky and very plastic; common very fine and few fine roots; few common very fine and fine irregular pores; many pressure faces; many intersecting slickensides; few vertical cracks 0.5 inch wide; gypsum >5.0 percent; SAR of 4.09; EC of 0.5 mmhos/cm; slightly effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary.

Bssny1—12 to 18 inches; reddish brown (2.5YR 4/3) clay, dark reddish brown (2.5YR 3/3) moist; strong medium and coarse wedge-shaped aggregates; extremely hard, extremely firm, very sticky and very plastic; common very fine and few fine roots; few very fine irregular pores; many intersecting slickensides; few vertical cracks; few very fine masses and crystals of gypsum and sodium sulfate; gypsum >5.0 percent; SAR of 11.3; EC of

0.5 mmhos/cm; slightly effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary.

Bssny2—18 to 32 inches; reddish brown (2.5YR 5/4) clay, reddish brown (2.5YR 4/4) moist; strong medium and coarse wedge-shaped aggregates; very hard, very firm; very sticky and very plastic; few very fine, fine, and medium roots; few very fine irregular pores; common intersecting slickensides; few vertical cracks; many fine and medium masses and crystals of gypsum and sodium sulfate; gypsum >5.0 percent; SAR of 12.8; EC of 1.6 mmhos/cm; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Bssny3—32 to 80 inches; reddish brown (2.5YR 5/4) clay, reddish brown (2.5YR 4/4) moist; strong coarse wedge-shaped aggregates; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; common intersecting slickensides; many masses and crystals of gypsum and sodium sulfate; gypsum 1.3 percent; SAR of 14; EC of 6.6 mmhos/cm; slightly effervescent; moderately alkaline (pH 8.2).

# **Range in Characteristics**

Particle-size control section: 40 to 55 percent clay
Depth to the gypsic horizon (with sodium sulfate
accumulations): 12 to 80 inches with 5 to 10
percent gypsum, gypsum content decreases in the
underlying horizon

Calcium carbonate equivalent: 1 to 5 percent

Vertic properties: slight gilgai microrelief ranges up to 2
inches; cracks 0.5 to 1 inches in width range from
2 to 30 inches vertically; few to many pressure
faces and intersecting slickensides below 2
inches.

Rock fragments: 0 to 1 percent sandstone and siliceous gravel

Reaction: Moderately alkaline throughout

A horizon: Hue: 2.5YR

Value: 4 dry or moist Chroma: 3 dry or moist

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 2 to 5

Bw horizon: Hue: 2.5YR

Value: 4 dry or moist Chroma: 3 dry or moist

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 2 to 5

Bss horizon: Hue: 2.5YR

Value: 5 dry, 4 moist

Chroma: 2 dry or moist

Calcium carbonate equivalent: 1 to 10 percent

Gypsum and sodium sulfate: Few to common clusters

of crystals

Percent gypsum: 5 to 10 percent

Salinity: 0-2 mmhos/cm Sodicity: 2-5 SAR

Bssny horizon: Hue: 2.5YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 4 dry or moist

Calcium carbonate equivalent: 1 to 10 percent

Percent gypsum: 5 to 10 percent Salinity: EC of 2 to 8 mmhos/cm

Sodicity: SAR of 5 to 14

## **Rionutria Series**

Taxonomic class: Clayey-skeletal, mixed, superactive,

frigid Typic Argiustolls

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Geomorphic position: Cuestas

Parent material: Slope alluvium and colluvium over residuum derived from sandstone, shale, and

limestone

Slope range: 5 to 20 percent Elevation: 7,000 to 7,600 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# **Typical Pedon**

Rionutria very gravelly loam, in an area of mapping unit 412, Rock outcrop-Rionutria-Zaster association, 15 to 80 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; about 1,050 feet east and 900 feet north of the southwest corner of sec. 34, T. 13 N., R. 16 W.; latitude 108 degrees, 31 minutes, 30 seconds and longitude 35 degrees, 18 minutes, 30 seconds.

The surface is covered by about 25 percent gravel, 10 percent cobbles, 5 percent stones, and 3 percent cobbles.

A—0 to 3 inches; reddish gray (5YR 5/2) very gravelly loam, dark reddish brown (5YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 25 percent gravel, 10 percent cobbles, 5 percent stones, and 3 percent boulders; slightly alkaline (pH 7.6); abrupt smooth boundary.

Btk1—3 to 12 inches; reddish brown (5YR 5/3) very cobbly clay loam, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; many very fine, fine, and few medium roots; few very fine irregular pores; few distinct clay films on faces of peds; 20 percent gravel, 25 percent cobbles, 5 percent stones; very slightly effervescent; few very fine concretions of calcium carbonate; slightly alkaline (pH 7.8); clear smooth boundary.

Btk2—12 to 24 inches; light reddish brown (5YR 6/3) very cobbly clay loam, reddish brown (5YR 4/3) moist; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine, fine, and medium roots; few very fine irregular pores; common distinct clay films on faces of peds; 10 percent gravel, 30 percent cobbles, 5 percent stones; slightly effervescent; common very fine concretions of calcium carbonate; moderately alkaline (pH 8.0); abrupt wavy boundary.

R—24 inches; San Andreas limestone.

# Range in Characteristics

Particle-size control section: 33 to 40 percent clay and 35 to 50 percent rock fragments

Depth to a lithic contact: 20 to 40 inches

Calcium carbonate equivalent: 5 to 10 percent Reaction: Slightly to moderately alkaline

A horizon:

Rock fragments: 20 to 45 percent total; 20 to 25 percent gravel, 5 to 10 percent cobbles, 5 to 10 percent stones. All fragments are limestone.

Btk horizons: Chroma: 3 or 4

Textures: clay loam or clay

Rock fragments: 35 to 50 percent total; 20 percent gravel, 10 to 25 percent cobbles, 5 to 10 percent

stones. All fragments are limestone.

### Rizno Series

Taxonomic class: Loamy, mixed superactive, calcareous, mesic Lithic Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, and ridges Parent material: Eolian material over residuum derived

from sandstone

Slope range: 2 to 20 percent *Elevation:* 6,200 to 6,700 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

### Typical Pedon

Rizno fine sandy loam, in an area of mapping unit 355, Rizno-Tekapo-Rock outcrop complex, 2 to 45 percent slopes; McKinley County, New Mexico; Ojo Caliente Reservoir Quadrangle; 1,800 feet north and 900 feet east of the southwest corner of sec. 33. T. 9 N., R. 20 W.; latitude 34 degrees, 57 minutes, 53 seconds and longitude 108 degrees, 57 minutes, 29 seconds.

- A—0 to 3 inches; reddish brown (5YR 4/4) fine sandy loam, dark reddish brown (5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few medium, fine and very fine roots; few very fine irregular pores; 5 percent channers; slightly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.
- C—3 to 8 inches; reddish brown (2.5YR 4/4) sandy loam, dark reddish brown (2.5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; few coarse and medium and common fine and very fine roots; few very fine irregular pores; 10 percent channers; strongly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

2R-8 inches; red sandstone.

# **Range in Characteristics**

Particle-size control section: 10 to 18 percent clay Depth to lithic contact: 5 to 20 inches to sandstone Calcium carbonate equivalent: 5 to 10 percent

A horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry; 3 or 4 moist

Chroma: 3 or 4 moist

Rock fragments: 0 to 20 percent gravel-sized

sandstone channers

C horizon:

Hue: 2.5YR or 5YR Value: 3 or 4 moist

Texture: sandy loam or fine sandy loam Rock fragments: 0 to 15 percent gravel-sized

sandstone channers

Some pedons have a thin Cr horizon of weathered sandstone above the lithic contact.

# **Robolata Series**

Taxonomic class: Fine, mixed, superactive, frigid

Pachic Argiustolls Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone, shale, and granite Slope range: 1 to 5 percent Elevation: 7,700 to 8,000 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

# **Typical Pedon**

Robolata loam, in an area of mapping unit 411, Ligocki-Robolata complex, 1 to 5 percent slopes; McKinley County, New Mexico; Page Quadrangle; 2,050 feet south and 100 feet west of the northeast corner of sec. 32, T. 13 N., R. 15 W.; latitude 35 degrees, 18 minutes, 56 seconds and longitude 108 degrees, 26 minutes, 28 seconds.

- A—0 to 6 inches; reddish brown (5YR 4/3) loam, dark reddish brown (5YR 3/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bt1—6 to 12 inches; reddish brown (5YR 4/3) loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; many very fine, fine, and few medium roots; common very fine and few fine irregular pores; few wormcasts; common distinct clay films on faces of peds; slightly alkaline (pH 7.6); abrupt wavy boundary.
- Bt2—12 to 20 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/2) moist; strong medium angular blocky structure; very hard, very firm, sticky and plastic; common very fine, fine, and few medium roots; common very fine and few fine irregular pores; many prominent clay films on faces of peds; 1 percent gravel; slightly alkaline (pH 7.6); abrupt wavy boundary.
- 2Bt3—20 to 30 inches; dark red (2.5YR 3/6) clay loam, dark reddish brown (2.5YR 3/4) moist; strong medium angular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; few very fine irregular pores; many prominent clay films on faces of peds; 1 percent gravel; slightly alkaline (pH 7.8); clear wavy boundary.
- 2Btk—30 to 50 inches; red (2.5YR 5/6) sandy clay loam, red (2.5YR 4/6) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and nonplastic; few very fine roots; few very fine irregular pores; few faint clay films on faces of

peds and bridging sand grains; 12 percent gravel; slightly effervescent; few very fine masses of calcium carbonate; 6 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear wavy boundary.

2BC—50 to 70 inches; red (2.5YR 5/6) very gravelly sandy loam, red (2.5YR 4/6) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 55 percent gravel; slightly effervescent; slightly alkaline (pH 7.8).

# **Range in Characteristics**

Particle-size control section: 35 to 50 percent clay Thickness of the mollic epipedon: 16 to 26 inches Depth to secondary carbonates: 20 to 40 inches

A horizon:

Hue: 5YR or 7.5YR Value: 4 dry, 3 moist Chroma: 2 or 3

Reaction: slightly alkaline

Bt horizon:

Hues: 2.5YR or 5YR Value: 3 or 4 dry, 3 moist

Chroma: 2 to 6

Textures: loam, clay loam, or clay

Rock fragments: 0 to 5 percent sandstone gravel

Reaction: slightly alkaline

Btk horizon:

Hues: 2.5YR or 5YR Value: 5 dry, 3 or 4 moist

Chroma: 4 or 6

Textures: sandy clay loam, clay loam, or clay Rock fragments: 0 to 25 percent sandstone gravel

Reaction: slightly to moderately alkaline

BCk horizon:

Hue: 2.5YR or 5YR Value: 5 dry, 3 or 4 moist

Chroma: 4 or 6

*Textures:* fine sandy loam or loam

Rock fragments: 0 to 55 percent sandstone gravel

Reaction: slightly to moderately alkaline

# Royosa Series

Taxonomic class: Mixed, mesic Aridic Ustipsamments

Depth class: Very deep

Drainage class: Excessively drained

Permeability: Rapid

Geomorphic position: Dunes

Parent material: Eolian material derived from

sandstone

Slope range: 1 to 15 percent Elevation: 6,400 to 7,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Royosa loamy fine sand, in an area of mapping unit 316, Royosa loamy fine sand, 1 to 15 percent slopes; McKinley County, New Mexico; High Lonesome Well Quadrangle; 1,000 feet south and 1,200 feet west of the northeast corner of sec 12, T. 10 N., R. 21 W.; latitude 35 degrees 06 minutes 52 seconds and longitude 109 degrees 00 minutes 05 seconds.

- A1—0 to 2 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; single grain; loose, very friable, nonsticky and nonplastic; common fine and many very fine roots; many very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- A2—2 to 6 inches; dark grayish brown (10YR 4/4) loamy fine sand, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium and many fine and very fine roots; many very fine irregular pores; slightly alkaline (pH 7.4); clear smooth boundary.
- C—6 to 65 inches; brown (7.5YR 4/4) loamy fine sand, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium and fine and common very fine roots; many very fine irregular pores; slightly alkaline (pH 7.4).

### Range in Characteristics

Particle-size control section: 3 to 10 percent clay Reaction: neutral or slightly alkaline

A horizon:

Hue: 7.5YR or 10YR

Value: 6 or 7 dry; 3 to 5 moist Chroma: 3 or 4 dry; 3 to 6 moist

C horizons:

Hue: 7.5YR or 10YR Value: 3 to 6 moist Chroma: 4 to 6 moist

Texture: loamy fine sand, loamy sand, or fine sand

### San Mateo Series

Taxonomic class: Fine-loamy, mixed, superactive,

calcareous, mesic Ustic Torrifluvents

Depth class: Very deep Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Valley sides and valley floors

Parent material: Fan and stream alluvium derived from sandstone and shale

Slope range: 0 to 3 percent Elevation: 6,300 to 6,900 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

### **Typical Pedon**

San Mateo clay loam, in an area of mapping unit 230, Sparank-San Mateo-Zia complex, 0 to 3 percent slopes; McKinley County, New Mexico; Mesa de los Toros Quadrangle; 10,500 feet west and 800 feet south of the northeast corner of sec. 1, T. 15 N., R. 9 W.; latitude 35 degrees, 33 minutes, 27 seconds and longitude 107 degrees, 47 minutes, 02 seconds.

- A—0 to 2 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; strong very fine granular structure; soft, friable, sticky and plastic; few fine and very fine roots; many very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- C1—2 to 15 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, firm, sticky and plastic; few fine and very fine roots; few very fine irregular pores; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.
- C2—15 to 30 inches; brown (10YR 5/3) sandy clay loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and nonplastic; few fine and very fine roots; common fine irregular pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- C3—30 to 39 inches; brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C4—39 to 45 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; many fine irregular pores; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C5—45 to 65 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8).

# Range in Characteristics

Particle-size control section: 20 to 34 percent clay Calcium carbonate equivalent: 1 to 5 percent

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 3 or 4 moist Chroma: 2 or 3 dry; 2 to 4 moist Salinity: EC of 1 to 2 mmhos/cm Reaction: slightly or moderately alkaline

C horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 3 or 4 moist

Chroma: 2 to 4

Texture: clay loam, sandy clay loam, silty clay loam,

or sandy loam

Salinity: EC of 2 to 4 mmhos/cm

Sodicity: SAR 5 to 10

Reaction: slightly to strongly alkaline

### Sanfeco Series

Taxonomic class: Fine, mixed, superactive, mesic

Typic Haplargids

Depth class: Very deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,400 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

### **Typical Pedon**

Sanfeco fine sandy loam, in an area of mapping unit 125, Sanfeco fine sandy loam, 0 to 2 percent slopes; McKinley County, New Mexico; El Dado Quadrangle; 400 feet south and 600 feet west of the northeast corner of sec. 19, T. 15 N., R. 7 W.; latitude 35 degrees, 31 minutes, 16 seconds and longitude 107 degrees, 36 minutes, 45 seconds (fig. 19).

A—0 to 2 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 3/4) moist; moderate thin and medium platy structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; few fine vesicular and irregular pores; slightly effervescent; moderately alkaline (pH 7.4); abrupt smooth boundary.

Bt—2 to 10 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure parting to moderate medium subangular blocky; slightly hard, firm, sticky and plastic; many very fine and fine roots; common fine irregular pores; common prominent clay films on faces of peds; strongly effervescent; moderately alkaline (pH 7.8); clear wavy boundary.

Btk1—10 to 27 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; strong fine and medium prismatic structure; hard, very firm, sticky and very plastic; many very fine and fine roots; common fine irregular pores; many prominent clay films on faces of peds; common fine filaments and masses of calcium carbonate; strongly effervescent; moderately alkaline (pH 7.8); clear wavy boundary.

2Btk2—27 to 35 inches; dark yellowish brown (10YR 4/4) sandy clay, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; common fine irregular pores; common prominent clay films on faces of peds and bridging sand grains; violently effervescent; common fine filaments and masses of calcium carbonate; moderately alkaline (pH 8.0); clear wavy boundary.

2Btk3—35 to 39 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; few fine irregular pores; common distinct clay films bridging sand grains; violently effervescent; common fine filaments and masses of calcium carbonate; moderately alkaline (pH 8.0); clear wavy boundary.

3Bk1—39 to 50 inches; yellowish brown (10YR 5/4) loamy coarse sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular pores; strongly effervescent; common fine masses of calcium carbonate; moderately alkaline (pH 8.0); clear wavy boundary.

3Bk2—50 to 65 inches; yellowish brown (10YR 5/4) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular pores; 1 percent gravel and 1 percent cobbles; slightly effervescent; calcium carbonate coats rock fragments; moderately alkaline (pH 8.0).

# **Range in Characteristics**

Particle-size control section: 35 to 50 percent clay and greater than 25 percent sand

Depth to secondary calcium carbonate: 5 to 25 inches

Calcium carbonate equivalent: 3 to 5 percent in the surface and 5 to 15 percent in the subsoil

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR of 0 to 2 in the surface and 2 to 5 in the

subsoil

Reaction: moderately alkaline throughout

A horizon:

Value: 5 or 6 dry; 3 or 4 moist

Chroma: 3 or 4

Bt or Btk horizons:

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4

Texture: clay loam, clay, sandy clay, or sandy clay

loam

Bk horizon:

Hue: 10YR or 2.5Y Value: 5 or 6 dry

Texture: loamy coarse sand, loamy sand, sandy loam,

or clay loam

Rock fragments: 0 to 5 percent total; 0 to 3 percent gravel; 0 to 2 percent cobbles. All fragments are

sandstone.

Some pedons have a C horizon below the Btk horizons.

# **Seco Series**

Taxonomic class: Very fine, mixed, superactive, frigid

Vertic Argiustolls

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Very slow

Geomorphic position: Valley floors

Parent material: Slope alluvium derived from basalt

Slope range: 1 to 5 percent Elevation: 8,000 to 8,400 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

#### **Typical Pedon**

Seco clay loam, in an area of mapping unit 420, Seco clay loam, 1 to 5 percent slopes; McKinley County, New Mexico; Marquez Quadrangle; latitude 35

degrees, 22 minutes, 27 seconds and longitude 107 degrees, 20 minutes, 23 seconds.

A—0 to 3 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and thick platy structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine irregular pores; slightly acid (pH 6.4); clear smooth boundary.

Bt—3 to 11 inches; dark grayish brown (10YR 4/2) clay, very dark brown (10YR 2/2) moist; strong very fine and fine subangular blocky structure; very hard, very firm, very sticky and very plastic; many prominent clay films on faces of peds; neutral (pH 7.2); abrupt wavy boundary.

Btss—11 to 23 inches; brown (7.5YR 4/2) clay, dark brown (7.5YR 3/2) moist; moderate fine and medium prismatic structure parting to strong fine angular blocky; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; many prominent clay films on faces of peds; common slickensides and pressure faces; vertical cracks less than 1/4 inch wide extend from 11 to 28 inches; slightly alkaline (pH 7.4); gradual irregular boundary.

Btkss—23 to 58 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; common fine and medium distinct dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) moist redox depletions; moderate medium angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few fine tubular pores; many prominent clay films on faces of peds; common slickensides and pressure faces; strongly effervescent; few fine masses of calcium carbonate and coating soft weathered basalt gravel; slightly alkaline (pH 7.8); clear wavy boundary.

2BCg—58 to 70 inches; light yellowish brown (2.5Y 6/3) clay, light olive brown (2.5Y 5/3) moist; common fine and medium prominent brown (7.5YR 5/4) and brown (7.5YR 4/4) moist redox concentrations; massive; extremely hard, extremely firm, very sticky and very plastic; very few very fine roots; very few very fine irregular pores; few fine soft white noneffervescent masses; slightly alkaline (pH 7.4).

### Range in Characteristics

Particle-size control section: 60 to 80 percent clay Mollic epipedon: 15 to 30 inches thick Depth to secondary calcium carbonate (when present): 20 to 50 inches.

Vertic features: depth to cracks, slickensides, and

pressure faces: 8 to 22 inches

Redoximorphic features: Depth: 20 to 50 inches Size: fine or medium

Contrast: distinct or prominent

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 2 to 4 dry or moist

A horizon:

Hue: 7.5YR or 10YR Value: 4 or 5 dry Chroma: 2 or 3 dry

Reaction: slightly acid or neutral

Bt horizon:

Hue: 5YR, 7.5YR, or 10YR

Value: 4 or 5 dry, 2 or 3 moist

Chroma: 2 to 4 dry, 0 to 4 moist

Texture: clay or silty clay

Reaction: neutral to moderately alkaline

Btss horizon:

Hue: 5YR, 7.5YR, or 10YR

Value: 4 or 5 dry, 2 or 3 moist

Chroma: 2 to 4 dry, 0 to 4 moist

Texture: clay or silty clay

Salinity: EC of 0 to 2 mmhos/cm

Reaction: neutral to moderately alkaline

Btk horizon (may be absent):

Hue: 7.5YR or 10YR

Value: 4 or 5 dry, 3 or 4 moist

Calcium carbonate equivalent: 1 to 5 percent

Salinity: EC of 0 to 2 mmhos/cm
Reaction: slightly or moderately alkaline

2BC horizon (may be absent):

Value: 4 to 6 dry, 4 or 5 moist Chroma: 2 or 3 moist

Salinity: EC of 0 to 2 mmhos/cm Reaction: slightly alkaline

#### Shadilto Series

Taxonomic class: Loamy, carbonatic, mesic Lithic Calciustepts

Depth class: Very shallow and shallow

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid Geomorphic position: Cuestas

Parent material: Eolian material and slope alluvium derived from sandstone and limestone

Slope range: 2 to 8 percent Elevation: 7,000 to 7,700 feet

Mean annual air temperature: 49 to 53 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 115 to 135 days

## **Typical Pedon**

Shadilto very gravelly sandy loam, in an area of mapping unit 375, Todest-Shadilto complex, 2 to 8 percent slopes; McKinley County, New Mexico; Thoreau Quadrangle; 600 feet west and 1,200 feet south of the northeast corner of sec. 23, T. 14 N., R. 13 W.; latitude 35 degrees, 26 minutes, 01 seconds and longitude 108 degrees, 10 minutes, 38 seconds.

The surface is covered by about 50 percent gravel and 5 percent cobbles.

A—0 to 1 inch; brown (7.5YR 5/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many fine and common medium roots; many fine vesicular pores; 50 percent gravel and 5 percent cobbles; strongly effervescent; few fine masses of calcium carbonate; 25 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—1 to 9 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and few medium roots; common fine irregular pores; 10 percent gravel; violently effervescent; many very fine masses and common fine and medium concretions of calcium carbonate and coating rock fragments; 70 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—9 to 13 inches; pinkish gray (7.5YR 6/2) sandy loam, brown (7.5YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and few medium and coarse roots; common fine irregular pores; 5 percent gravel and 5 percent cobbles; violently effervescent; many fine masses and concretions of calcium carbonate and coating rock fragments; 75 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk3—13 to 15 inches; pinkish white (7.5YR 8/2) sandy loam, pink (7.5YR 7/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; few fine irregular pores; 5 percent gravel and 2 percent cobbles; violently effervescent; many fine masses and concretions of calcium carbonate and coating rock fragments; 80 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

R—15 inches; limestone.

### Range in Characteristics

Particle-size control section: 8 to 18 percent clay and

more than 55 percent sand Depth to calcic horizon: 1 to 3 inches

Depth to lithic contact: 6 to 20 inches to limestone

A horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 3 or 4 moist

Chroma: 3 or 4 moist

Rock fragments: 35 to 60 percent total; 35 to 60 percent gravel; 0 to 10 percent cobbles. Most fragments are limestone with some sandstone.

Calcium carbonate equivalent: 10 to 40 percent

Bk horizon:

Hue: 7.5YR or 10YR

Value: 5 to 8 dry, 3 to 7 moist Chroma: 2 to 4 dry, 3 or 4 moist

Rock fragments: 5 to 35 percent total; 5 to 20 percent gravel; 0 to 30 percent cobbles. All fragments are limestone.

Calcium carbonate equivalent: 40 to 80 percent

# **Shiprock Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Typic Haplargids Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, and valley

sides

Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 2 to 8 percent Elevation: 5,800 to 6,800 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

#### **Typical Pedon**

Shiprock fine sandy loam, in an area of mapping unit 115, Razito-Shiprock complex, 3 to 8 percent slopes; McKinley County, New Mexico; Seven Lakes NW Quadrangle; 1,600 feet east and 1,400 feet north of the southwest corner of sec. 8, T. 20 N., R. 10 W.; latitude 35 degrees, 58 minutes, 36 seconds and longitude 107 degrees, 55 minutes, 54 seconds.

A—0 to 3 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; moderate fine granular structure; soft, very friable,

nonsticky and nonplastic; few very fine roots; many very fine irregular pores; neutral (pH 6.8); abrupt smooth boundary.

- Bt—3 to 15 inches; strong brown (7.5YR 5/6) fine sandy loam, dark yellowish brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; common very fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline (pH 7.4); abrupt smooth boundary.
- Bk1—15 to 37 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine and common very fine roots; few very fine tubular pores; strongly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Bk2—37 to 60 inches; very pale brown (10YR 7/4) fine sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; violently effervescent; moderately alkaline (pH 8.4).

### **Range in Characteristics**

Particle-size control section: 10 to 18 percent clay

A horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry; 4 to 6 moist

Chroma: 4 to 6 moist

Texture: fine sandy loam or loamy fine sand

Reaction: neutral or slightly alkaline

Bt horizon:

Hue: 7.5YR or 10YR Value: 3 to 5 moist Chroma: 4 to 6 moist

Reaction: neutral to moderately alkaline

Bk horizon:

Hue: 7.5YR or 10YR

Value: 6 or 7 dry; 4 to 6 moist

Chroma: 4 to 6 moist Texture: fine sandy loam

Calcium carbonate equivalent: 1 to 10 percent

Reaction: moderately alkaline

### **Shoemaker Series**

Taxonomic class: Fine-loamy, mixed, superactive,

frigid Typic Haplustalfs

Depth class: Moderately deep

Drainage class: Moderately well drained

Permeability: Moderate

Geomorphic position: Mesas and cuestas

Parent material: Eolian and slope alluvium derived from sandstone and shale

Slope range: 2 to 8 percent Elevation: 7,000 to 7,600 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

### **Typical Pedon**

Shoemaker loamy fine sand, in an area of mapping unit 400, Shoemaker-Stozuni complex, 2 to 8 percent slopes; McKinley County, New Mexico; Shoemaker Canyon Quadrangle; 1,200 feet south and 2,600 feet west of the northeast corner of sec. 36, T. 9 N., R. 17 W.; latitude 34 degrees, 58 minutes, 13 seconds and longitude 108 degrees, 34 minutes, 58 seconds.

- A—0 to 2 inches; brown (7.5YR 5/4) loamy fine sand, brown (7.5YR 4/4) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine, and few medium roots; many very fine irregular pores; neutral (pH 6.6); abrupt smooth boundary.
- Bt1—2 to 7 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine, and few medium roots; common fine tubular pores; few faint clay films bridging sand grains; neutral (pH 6.6); abrupt smooth boundary.
- Bt2—7 to 20 inches; strong brown (7.5YR 4/6) sandy clay loam, brown (7.5YR 4/4) moist; few fine faint mottles; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine, and few medium roots; few fine irregular pores; common prominent clay films bridging sand grains; slightly acid (pH 6.4); clear smooth boundary.
- Bt3—20 to 28 inches; strong brown (7.5YR 5/6) sandy clay loam, strong brown (7.5YR 4/6) moist; common medium, distinct, reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and medium roots; few fine irregular pores; common prominent clay films bridging sand grains; slightly acid (pH 6.4); abrupt smooth boundary.

2R—28 inches: sandstone.

### **Range in Characteristics**

Particle-size control section: 20 to 35 percent clay Depth to bedrock: 20 to 40 inches to sandstone Redoximorphic concentrations: few to common, fine or common, faint or distinct, 5YR or 7.5YR redox concentrations at a depth of 7 to 26 inches Reaction: neutral in the surface and slightly alkaline in the subsoil

A horizon:

Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 3 or 4 moist

Chroma: 2 to 4 moist

Rock fragments: 0 to 10 percent gravel; 0 to 5 percent

cobbles. All fragments are sandstone.

Bt horizon:

Hue: 5YR or 7.5YR

Value: 4 to 6 dry, 3 to 5 moist

Texture: sandy clay loam or fine sandy loam

Rock fragments: 0 to 10 percent gravel; 0 to 5 percent

cobbles. All fragments are sandstone.

### Silcat Series

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Haplusterts

Depth class: Very deep

Drainage class: Well drained

Permeability: Very slow

Geomorphic position: Valley floors, valley sides, and

hills

Parent material: Slope alluvium derived from shale

Slope range: 1 to 10 percent Elevation: 6,800 to 7,500 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

# **Typical Pedon**

Silcat clay loam, in an area of mapping unit 525, Silcat clay loam, 1 to 10 percent slopes; McKinley County, New Mexico; Upper Galestina Canyon Quadrangle; 800 feet south and 750 feet west of the northeast corner of sec. 19, T. 9 N., R. 17 W.; latitude 35 degrees, 00 minutes, 02 seconds and longitude 108 degrees, 39 minutes, 54 seconds.

A—0 to 2 inches; light olive brown (2.5Y 5/6) clay loam, brown (10YR 4/3) moist; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; slightly alkaline (pH 7.5); abrupt smooth boundary.

2BC—2 to 7 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots; few fine

irregular pores; common pressure faces; vertical cracks 0.75 inches wide extend from 2 inches to 38 inches depth, upper part of some cracks are filled with surface material; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

2BCss1—7 to 18 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; strong medium prismatic structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; many pressure faces and few slickensides; vertical cracks 0.75 inches wide; strongly effervescent; moderately alkaline (pH 8.1); clear smooth boundary.

2BCss2—18 to 38 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; massive; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; many slickensides up to 3 inches in diameter are tilted 40 degrees from the horizontal; vertical cracks 0.75 inches wide; strongly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary.

2Bk—38 to 65 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few fine tubular pores; strongly effervescent; few very fine irregular filaments and masses of calcium carbonate; moderately alkaline (pH 7.9).

#### Range in Characteristics

Particle-size control section: 45 to 55 percent clay Vertic features: Vertical cracks extend from the surface but most extend from 2 to 40 inches. Slickensides and pressure faces occur from 5 to 40 inches.

Reaction: Slightly alkaline in the surface and moderately alkaline in the subsoil

A horizon:

Hue: 2.5Y or 10YR

Chroma: 4 or 6 dry, 2 or 3 moist

Rock fragments: 0 to 5 percent sandstone gravel or channers

2BCss horizons:

Value: 4 or 5 dry, 2 or 4 moist

Chroma: 2 to 4 moist

2Bk horizon:

Value: 4 or 5 dry

Chroma: 2 to 4 dry or moist

# Simitarq Series

Taxonomic class: Loamy, mixed, superactive, mesic

Lithic Haplustalfs

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Mesas and cuestas

Parent material: Eolian material and slope alluvium over residuum derived from sandstone

Slope range: 2 to 8 percent Elevation: 7,200 to 8,100 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 115 to 135 days

### **Typical Pedon**

Simitarq sandy loam, in an area of mapping unit 368, Simitarq-Celavar sandy loams, 2 to 8 percent slopes; McKinley County, New Mexico; Continental Divide Quadrangle; 500 feet south and 800 feet west of the northeast corner of sec. 29, T. 14 N., R. 14 W.; latitude 35 degrees, 25 minutes, 16 seconds and longitude 108 degrees, 20 minutes, 13 seconds.

A—0 to 1 inch; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; strong thick platy structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many fine vesicular pores; 10 percent channers and gravel; neutral (pH 7.2); abrupt smooth boundary.

Bt1—1 to 6 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine and fine and few medium roots; common fine irregular pores; many distinct clay films coating faces of peds and bridging sand grains; 5 percent channers and 1 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt2—6 to 14 inches; reddish brown (5YR 5/4) sandy clay, dark reddish brown (5YR 3/4) moist; strong medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine and few medium roots; common fine tubular pores; many prominent clay films on faces of peds and bridging sand grains; 2 percent channers; slightly alkaline (pH 7.4); clear wavy boundary.

R—14 inches; sandstone; the top 1 inch is weathered with Bt2 material in the cracks.

### Range in Characteristics

Depth to lithic contact: 5 to 20 inches to sandstone Particle-size control section: 20 to 35 percent clay and greater than 35 percent sand. The lower argillic horizons contain more than 35 percent clay but are not thick enough or have a high enough clay content to make the pscs clayey.

Reaction: neutral or slightly alkaline throughout

A horizon:

Hue: 5YR, 7.5YR, or 10YR Value: 4 to 6 dry, 3 or 4 moist Chroma: 3 or 4 dry, 2 to 4 moist

Rock fragments: 5 to 30 percent total; 5 to 25 percent gravel; 0 to 5 percent cobbles. All fragments are

siliceous and sandstone.

Bt1 horizon:

Hue: 2.5YR, 5YR, or 7.5YR Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4

Texture: sandy clay loam or clay loam with less than

35 percent clay

Rock fragments: 5 to 15 percent total; 5 to 15 percent

gravel; 0 to 5 percent cobbles

Bt2 horizon:

Hue: 2.5YR or 5YR

Value: 3 to 5 dry, 2.5 to 4 moist

Chroma: 3 or 4

Texture: sandy clay, clay, or clay loam with greater

than 35 percent clay

Rock fragments: 0 to 35 percent total; 0 to 30 percent gravel; 0 to 20 percent cobbles. All fragments are

sandstone.

Some pedons have a Btk horizon with less than 5 percent calcium carbonate equivalent.

# Skyvillage Series

Taxonomic class: Loamy, mixed, superactive, calcareous, mesic Lithic Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Moderate to moderately rapid

Geomorphic position: Mesas, cuestas, breaks, hills,

and ridges

Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 2 to 20 percent Elevation: 6,400 to 7,800 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# Typical Pedon

Skyvillage very channery sandy loam, in an area of mapping unit 250 Hospah-Skyvillage-Rock outcrop

complex, 2 to 35 percent slopes; McKinley County, New Mexico; Kin Nahzin Ruins Quadrangle; 800 feet west and 200 feet south of the northeast corner of sec. 26, T. 18N, R. 9W. latitude 35 degrees, 46 minutes, 03 seconds and longitude 107 degrees, 45 minutes, 18 seconds.

The surface is covered by about 10 percent cobbles, 30 percent channers, and 5 percent stones.

- A—0 to 1 inch; yellowish brown (10YR 5/4) very channery sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine irregular and few fine vesicular pores; 10 percent cobbles, 30 percent channers, and 5 percent stones; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.
- Bw—1 to 5 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/4) moist; weak very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots; common fine irregular pores; 5 percent channers; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.
- Ck—5 to 8 inches; light brown (7.5YR 6/4) channery sandy clay loam, dark brown (7.5YR 4/4) moist; weak very fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; few very fine and fine and few medium roots; common fine irregular pores; 20 percent channers and gravel; common fine masses of calcium carbonate and coating coarse fragments; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

2R—8 inches; calcareous sandstone.

## **Range in Characteristics**

Particle-size control section: 10 to 25 percent clay with more than 45 percent sand and 0 to 20 percent rock fragments

Depth to lithic contact: 6 to 20 inches to sandstone Calcium carbonate equivalent: 0 to 15 percent Reaction: slightly alkaline in the surface and moderately alkaline in the subsoil

A horizon:

Hue: 7.5YR, 10YR, or 2.5Y Value: 5 or 6 dry; 4 or 5 moist

Chroma: 4 to 6 moist

Texture: sandy loam or fine sandy loam

Rock fragments: 5 to 45 percent total; 5 to 45 percent channers and gravel; 0 to 10 percent cobbles; 0 to 5 percent stones. All fragments are sandstone.

Bw (when present):

Hue: 7.5YR, 10YR, or 2.5Y Value: 5 or 6 dry, 3 to 5 moist

Texture: sandy loam, fine sandy loam, or sandy clay

loam

Rock fragments: 0 to 20 percent sandstone channers

or gravel

C horizon (when present): Hue: 7.5YR, 10YR, or 2.5Y Value: 5 or 6 dry, 4 or 5 moist

Chroma: 4 or 6 moist Textures: sandy loam

Rock fragments: 0 to 20 percent total; 0 to 20 percent channers or gravel; 0 to 5 percent cobbles. All

fragments are sandstone.

## Sparank Series

Taxonomic class: Fine, mixed, superactive, calcareous, mesic Ustic Torrifluvents

Depth class: Very deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Valley sides and valley floors Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 0 to 3 percent Elevation: 6,300 to 6,900 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### Typical Pedon

Sparank silty clay loam, in an area of mapping unit 230, Sparank-San Mateo-Zia complex, 0 to 3 percent slopes; McKinley County, New Mexico; Ambrosia Lake Quadrangle; 5,000 feet north and 400 feet west of the northeast corner of sec. 35, T. 14 N., R. 10 W.; latitude 35 degrees, 25 minutes, 10 seconds and longitude 107 degrees, 51 minutes, 25 seconds.

- A—0 to 2 inches; grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 4/2) moist; strong fine granular structure; soft, friable, sticky and plastic; few fine and very fine roots; many very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- C1—2 to 25 inches; grayish brown (10YR 5/2) clay, brown (10YR 4/3) moist; massive; slightly hard, firm, sticky and plastic; few fine and very fine roots; few very fine irregular pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.
- C2-25 to 65 inches; brown (10YR 4/3) clay, dark

brown (10YR 3/3) moist; massive; hard, very firm, very sticky and very plastic; few very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6).

#### Range in Characteristics

Particle-size control section: 35 to 55 percent clay Reaction: slightly to moderately alkaline Calcium carbonate equivalent: 1 to 5 percent Salinity: EC of 0 to 2 in the surface and 0 to 4 in the

substratum Sodicity: SAR of 0 to 2

A horizon:

Hue: 10YR or 2.5Y

Value: 5 or 6 dry; 3 or 4 moist Chroma: 2 or 3 dry; 2 to 4 moist

C horizon:

Hue: 10YR or 2.5Y

Value: 4 or 5 dry; 3 or 4 moist Chroma: 2 or 3 dry; 2 to 4 moist Texture: clay, silty clay, or clay loam

# Sparham Series

Taxonomic class: Fine, mixed, superactive, calcareous, mesic Aridic Ustifluvents

Depth class: Very deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,600 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 14 to 16 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Sparham clay loam, in an area of mapping unit 55, Sparham clay loam, 0 to 2 percent slopes; McKinley County, New Mexico; Upper Nutria Quadrangle; 400 feet north and 2,400 feet west of the southeast corner of sec. 13, T. 12 N., R. 17 W.; latitude 35 degrees, 16 minutes, 17 seconds and longitude 108 degrees, 34 minutes, 57 seconds.

A—0 to 2 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; strong coarse platy structure parting to strong fine granular; slightly hard, firm, sticky and plastic; common very fine and fine roots; many very fine tubular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

- C1—2 to 14 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; massive, very hard, firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C2—14 to 18 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.
- C3—18 to 27 inches; grayish brown (2.5Y 5/2) clay, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C4—27 to 31 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Cz-31 to 65 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few fine irregular pores; many medium irregular clusters of salt crystals; strongly effervescent; moderately alkaline (pH 8.0).

#### Range in Characteristics

Particle-size control section: 40 to 55 percent clay Depth to salt crystals (when present): 20 to 35 inches Calcium carbonate equivalent: 1 to 5 percent

Salinity: EC of 0 to 2 in the surface and 2 to 4 mmhos/

cm in the substratum Sodicity: SAR of 1 to 5

Reaction: slightly to moderately alkaline

A horizon: Hue: 10YR

Value: 3 or 4 moist Chroma: 3 dry and moist

C horizon: Hue: 10YR

Chroma: 2 to 4 dry; 3 to 6 moist

Texture: sandy clay loam, clay loam, clay, or silty clay

## Starlake Series

Taxonomic class: Fine, mixed, superactive, mesic

Ustic Natrargids Depth class: Very deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Valley floors and valley sides Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 1 to 3 percent Elevation: 6,300 to 6,700 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Starlake clay, in an area of mapping unit 16, Starlake clay, 1 to 3 percent slopes; McKinley County, New Mexico; Starlake Quadrangle; 500 feet east and 2,250 feet north of the southwest corner of sec. 4, T. 19 N., R. 5 W.; latitude 35 degrees, 54 minutes, 20 seconds and longitude 107 degrees, 22 minutes, 37 seconds.

Btn1—0 to 3 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; strong medium prismatic structure; very hard, very firm, sticky and plastic; common fine and very fine roots; common very fine tubular pores; many prominent clay films on faces of peds; 5 percent siderite gravel on the surface; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

Btn2—3 to 9 inches; dark grayish brown (2.5Y 5/2) clay, grayish brown (2.5Y 4/2) moist; moderate coarse prismatic structure parting to fine and medium subangular blocky structure; extremely hard, extremely firm, sticky and plastic; many fine and very fine roots; few very fine tubular pores; many distinct clay films on faces of peds; strongly effervescent; very strongly alkaline; clear smooth boundary.

Btn3—9 to 12 inches; light brownish gray (2.5Y 6/2) clay, grayish brown (2.5Y 5/2) moist; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky structure; extremely hard, extremely firm, sticky and plastic; common fine, very fine and few medium roots; few very fine tubular pores; many distinct clay films on faces of peds; strongly effervescent; strongly alkaline; clear smooth boundary.

Btknz1—12 to 20 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine, fine and few medium roots; common very fine tubular pores; common distinct

clay films on faces of peds; common filaments and masses of sodium sulfate; few very fine masses of calcium carbonate; strongly effervescent; moderately alkaline; clear smooth boundary.

Btknz2—20 to 40 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds; few fine filaments and masses of sodium sulfate with few gypsum crystals; few very fine masses of calcium carbonate; strongly effervescent; moderately alkaline; clear smooth boundary

Btknz3—40 to 54 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds; common medium filaments and masses of sodium sulfate with few gypsum crystals; few very fine masses of calcium carbonate; strongly effervescent; very strongly alkaline; clear smooth boundary

Btknz4—54 to 65 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; moderate fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; common very fine tubular pores; common distinct clay films on faces of peds; few medium filaments and masses of sodium sulfate with few gypsum crystals; very few very fine masses of calcium carbonate; strongly effervescent; very strongly alkaline.

## **Range in Characteristics**

Particle-size control section: 35 to 50 percent clay Depth to sodium sulfate and calcium sulfate accumulation: 5 to 18 inches

Percent gypsum: 0 to 1 percent

Depth to secondary calcium carbonate: 5 to 15 inches.

Calcium carbonate equivalent: 5 to 15 percent

Sodicity: SAR of 13 to 30

Salinity: EC of 2 to 8 mmhos/cm

Reaction: strongly or very strongly alkaline

E horizon (when present):

Hue: 10YR

Value: 6 dry; 4 or 5 moist

Chroma: 2 or 4 dry; 3 or 4 moist

Texture: loam

Rock fragments: 0 to 10 percent siderite and

sandstone gravel

Note: This horizon occurs in the less severely eroded

areas.

Bt horizons:

Hue: 10YR or 2.5Y

Value: 4 to 6 dry; 3 to 5 moist

Chroma: 2 to 4

Texture: clay or clay loam

Rock fragments: 0 to 5 percent siderite and sandstone

grave

Some pedons have a By and C horizon occurring

below 40 inches.

## Stozuni Series

Taxonomic class: Loamy, mixed, superactive,

nonacid, frigid Lithic Ustorthents Depth class: Very shallow and shallow

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, hills, and ridges

Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 2 to 20 percent Elevation: 7,000 to 8,000 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Stozuni sandy loam, in an area of mapping unit 400, Shoemaker-Stozuni complex, 2 to 8 percent slopes; McKinley County, New Mexico; Horsehead Canyon NW Quadrangle; 2,400 feet east and 2,000 feet south of the northwest corner of sec. 36, T. 9 N., R. 17 W.; latitude 34 degrees, 58 minutes, 01 second and longitude 108 degrees, 35 minutes, 01 seconds.

- A—0 to 2 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and many very fine roots; many very fine irregular pores; neutral (pH 7.0); abrupt smooth boundary.
- C1—2 to 10 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium and many fine and very fine roots; many very fine irregular pores; neutral (pH 7.2); clear smooth boundary.

C2—10 to 15 inches; strong brown (7.5YR 4/6) fine sandy loam, brown (7.5YR 4/4) moist; soft, very friable, nonsticky and nonplastic; common fine and many very fine roots; many very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

2R—15 inches; sandstone.

## **Range in Characteristics**

Particle-size control section: 6 to 18 percent clay Depth to lithic contact: 5 to 20 inches to sandstone

Reaction: neutral throughout

A horizon:

Hue: 7.5YR or 10YR Value: 3 or 4 moist Chroma: 2 to 4 moist

Rock fragments: 0 to 25 percent gravel; 0 to 10 percent cobbles. All fragments are sandstone.

C horizons:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry; 3 or 4 moist Chroma: 4 to 6 dry; 2 to 4 moist

Texture: sandy loam

Rock fragments: 0 to 20 percent gravel; 0 to 5 percent

cobbles. All fragments are sandstone.

## **Suwanee Series**

Taxonomic class: Fine-loamy, mixed, superactive,

calcareous, mesic Ustic Torrifluvents

Depth class: Very deep Drainage class: Well drained

Permeability: Moderately slow and slow Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone, siltstone, and shale

Slope range: 0 to 2 percent Elevation: 6,100 to 6,500 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### **Typical Pedon**

Suwanee clay loam, in an area of mapping unit 42, Suwanee clay loam, 0 to 2 percent slopes; McKinley County, New Mexico; Zuni Quadrangle; 1,200 feet south and 1,000 feet east of the northwest corner of sec. 21, T. 10 N., R. 19 W.; latitude 35 degrees, 05 minutes, 12 seconds and longitude 108 degrees, 51 minutes, 08 seconds.

Ap—0 to 4 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and few fine

- roots, common fine irregular pores; violently effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.
- C1—4 to 14 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; common very fine and few fine roots; few fine irregular pores; violently effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C2—14 to 22 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; common very fine and few fine roots; few fine irregular pores; violently effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C3—22 to 34 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; few fine irregular pores; violently effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- C4—34 to 48 inches; reddish brown (2.5YR 5/4) silt loam, reddish brown (2.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few fine irregular pores; violently effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- C5—48 to 65 inches; reddish brown (2.5YR 5/4) clay loam, reddish brown (2.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; few fine irregular pores; violently effervescent; slightly alkaline (pH 7.8).

## **Range in Characteristics**

Particle-size control section: 20 to 35 percent clay Percent calcium carbonate equivalent: 5 to 10 percent Reaction: slightly or moderately alkaline throughout

A horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6

Texture: clay loam or clay

C horizon:

Hue: 2.5YR or 5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6

Texture: highly stratified layers of sandy clay loam, clay loam, silty clay loam, clay, or silt loam

#### **Techado Series**

*Taxonomic class:* Clayey, mixed, superactive, nonacid, frigid, shallow Typic Ustorthents

Depth class: Shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, hills, and ridges Parent material: Slope alluvium and colluvium over

residuum derived from shale Slope range: 5 to 40 percent Elevation: 6,600 to 8,000 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Techado gravelly clay, in an area of mapping unit 403, Valnor-Techado complex, 2 to 25 percent slopes; McKinley County, New Mexico; Shoemaker Canyon Quadrangle; 1,000 feet south and 1,600 feet west of the northeast corner of sec. 25, T. 9 N., R. 17 W.; latitude 34 degrees, 58 minutes, 43 seconds and longitude 108 degrees, 34 minutes, 45 seconds.

The surface is covered by about 20 percent gravel and 5 percent cobbles.

- A—0 to 3 inches; light olive brown (2.5Y 5/4) gravelly clay, olive brown (2.5Y 4/4) moist; moderate fine granular structure; slightly hard, firm, sticky and plastic; few medium and many fine and very fine roots; few very fine irregular pores; 20 percent gravel and 5 percent cobbles; neutral (pH 6.8); clear wavy boundary.
- 2C—3 to 13 inches; light olive brown (2.5Y 5/6) clay, light olive brown (2.5Y 5/4) moist; massive; very hard, very firm very sticky and very plastic; common medium and few fine roots; few very fine irregular pores; neutral (pH 6.8); abrupt wavy boundary.

2Cr—13 inches; variegated shale.

#### Range in Characteristics

Particle-size control section: 40 to 55 percent clay Depth to a paralithic contact: 10 to 20 inches to shale Reaction: neutral to slightly alkaline

A horizon:

Hue: 10YR or 2.5Y

Value: 4 or 5 dry; 3 to 5 moist

Chroma: 2 to 4 dry and moist Texture: clay or clay loam

Rock fragments: 15 to 25 percent gravel or channers; 0 to 5 percent cobbles. All fragments are sandstone.

C horizon:

Hue: 10YR or 2.5Y

Value: 3 to 5 dry; 2 to 5 moist Chroma: 3 to 6 dry; 3 to 4 moist

## **Teczuni Series**

Taxonomic class: Fine, mixed, superactive, mesic

Calcidic Haplustalfs
Depth class: Very deep
Drainage class: Well drained

Permeability: Slow

Geomorphic position: Cuestas, valley sides, hills, and

ridges

Parent material: Eolian material and slope alluvium

derived from sandstone and shale

Slope range: 1 to 5 percent Elevation: 6,800 to 7,200 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 13 to 14 inches

Frost-free period: 115 to 135 days

## **Typical Pedon**

Teczuni loam, in an area of mapping unit 560, Flugle-Teczuni complex, 1 to 5 percent slopes; McKinley County, New Mexico; Shoemaker Canyon Quadrangle; 2,600 feet north and 2,200 feet east of the southwest corner of sec. 34, T. 9 N., R. 16 W.; latitude 34 degrees, 57 minutes, 58 seconds and longitude 108 degrees, 30 minutes, 52 seconds.

A—0 to 2 inches; brown (7.5YR 5/4) loam, brown (7.5YR 4/4) moist; moderate medium platy structure; soft; very friable, nonsticky and nonplastic; many very fine and fine roots; many medium and fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.

Bt1—2 to 6 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular pores; common distinct clay films on faces of peds; neutral (pH 7.2); clear smooth boundary.

Bt2—6 to 16 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; strong medium prismatic structure; hard, firm, sticky and plastic; few medium and common very fine and fine roots; few very fine tubular pores; many prominent clay films on faces of peds; neutral (pH 7.2); abrupt smooth boundary.

Btk—16 to 33 inches; strong brown (7.5YR 5/6) clay loam, brown (7.5YR 4/4) moist; strong medium prismatic structure; hard, firm, sticky and plastic; common very fine and fine roots; few very fine tubular pores; many prominent clay films on faces of peds; strongly effervescent; common fine and medium seams, filaments, and masses of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.

Bk1—33 to 47 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; massive; very hard, very firm, very sticky and very plastic; few fine roots; few very fine irregular pores; violently effervescent; common coarse seams and masses of calcium carbonate; slightly alkaline (pH 7.6); clear smooth boundary.

Bk2—47 to 65 inches; light brown (7.5YR 6/4) clay, yellowish brown (10YR 5/4) moist; massive; very hard, very firm, very sticky and very plastic; few fine roots; few very fine irregular pores; violently effervescent; many medium masses, seams, and filaments of calcium carbonate; slightly alkaline (pH 7.8).

## Range in Characteristics

Particle-size control section: 40 to 50 percent clay Depth to calcic horizon: 20 to 45 inches

A horizon:

Value: 4 or 5 dry, 3 or 4 moist

Rock fragments: 0 to 5 percent sandstone gravel

Reaction: neutral or slightly alkaline

Bt horizon:

Hue: 5YR or 7.5YR Chroma: 4 or 6

Texture: clay loam or clay

Reaction: neutral or slightly alkaline

Bk horizon:

Hue: 7.5YR or 10YR

Value: 5 or 6 dry, 4 or 5 moist

Texture: clay, clay loam, or sandy clay loam Calcium carbonate equivalent: 15 to 30 percent

Reaction: slightly or moderately alkaline

## Tekapo Series

Taxonomic class: Clayey, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas, cuestas, and ridges Parent material: Slope alluvium and colluvium over residuum derived from shale and siltstone

Slope range: 10 to 45 percent Elevation: 6,200 to 6,700 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Tekapo channery silty clay loam, in an area of mapping unit 355, Rizno-Tekapo-Rock outcrop complex, 2 to 45 percent slopes; McKinley County, New Mexico; Ojo Caliente Reservoir Quadrangle; 800 feet north and 400 feet west of the southeast corner of sec. 32, T. 9 N., R. 20 W.; latitude 34 degrees, 57 minutes, 42 seconds and longitude 108 degrees, 57 minutes, 44 seconds.

The surface is covered by about 20 percent channers.

- A—0 to 2 inches; reddish brown (2.5YR 4/4) channery silty clay loam, reddish brown (2.5YR 4/4) moist; strong fine granular structure; soft, friable, slightly sticky and slightly plastic; common fine and many very fine roots; many very fine irregular pores; 20 percent channers; slightly effervescent; slightly alkaline (7.6); abrupt smooth boundary.
- C—2 to 10 inches; reddish brown (2.5YR 4/4) silty clay, dark red (2.5YR 3/6) moist; massive; hard, firm, sticky and plastic; few medium and coarse, many fine and common very fine roots; common very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

2Cr-10 inches; red shale and siltstone.

## Range in Characteristics

Particle-size control section: 35 to 50 percent clay, less than 35 percent sand

Depth to a paralithic contact: 6 to 20 inches to shale and siltstone

Calcium carbonate equivalent: 1 to 5 percent

A horizon:

Value: 4 or 5 dry; 3 or 4 moist

Chroma: 4 to 6

Rock fragments: 15 to 20 percent gravel and gravelsized channers. All fragments are sandstone.

C horizon:

Value: 4 or 5 dry; 3 or 4 moist

Chroma: 4 or 6

Texture: silty clay loam or silty clay

Rock fragments: 0 to 15 percent gravel or gravel-sized

channers. All fragments are sandstone.

#### **Tinian Series**

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Haplustalfs

Depth class: Moderately deep Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Mesas and cuestas Parent material: Slope alluvium derived from

sandstone and shale Slope range: 1 to 6 percent Elevation: 6,800 to 7,500 feet

Mean annual air temperature: 46 to 49 inches F Mean annual precipitation: 13 to 14 inches

Frost-free period: 100 to 135 days

#### **Typical Pedon**

Tinian very fine sandy loam, in an area of mapping unit 30, Orlie-Tinian complex, 1 to 6 percent slopes; McKinley County, New Mexico; Rincon Marquez Quadrangle; 2,000 feet west and 2,600 feet north of the southeast corner of sec. 2, T. 8 N., R. 6 W.; latitude 35 degrees, 49 minutes, 11 seconds and longitude 107 degrees, 26 minutes, 25 seconds (fig. 20).

- A—0 to 3 inches; brown (10YR 5/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and nonplastic; common fine and many very fine roots; many very fine irregular and common fine vesicular pores; slightly alkaline (pH 7.6); clear smooth boundary.
- Bt1—3 to 8 inches; brown (10YR 4/4) clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine and few medium roots; common fine irregular pores; common distinct clay films on faces of peds and lining pores; slightly alkaline (pH 7.6); clear smooth boundary.
- Bt2—8 to 19 inches; dark yellowish brown (10YR 3/4) clay, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to strong fine and medium angular blocky; hard, firm, sticky and plastic; common fine and very fine and few medium roots; few medium and common fine irregular pores; many prominent clay films on faces of peds and lining pores; slightly alkaline; abrupt smooth boundary.
- Btk—19 to 24 inches; dark yellowish brown (10YR 4/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium angular blocky structure; hard, firm, sticky and plastic; few fine and very

fine roots; common fine irregular pores; common prominent clay films on faces of peds and lining pores; strongly effervescent; common fine irregular seams and filaments of calcium carbonate; moderately alkaline (pH 7.8); abrupt smooth boundary.

2R—24 inches; hard sandstone.

## **Range in Characteristics**

Particle-size control section: 35 to 45 percent clay Depth to lithic contact: 20 to 40 inches to hard sandstone

A horizon: *Hue:* 10YR

Value: 5 or 6 dry, 4 or 5 moist Chroma: 3 or 4 dry or moist

Reaction: neutral or slightly alkaline

Bt horizons: Hue: 10YR

Value: 3 to 5 dry or moist Chroma: 3 or 4 dry or moist

Texture: silty clay loam, clay loam, or clay Calcium carbonate equivalent: 0 to 1 percent

Reaction: slightly alkaline

Btk or Bk horizons:

Hue: 10YR

Value: 3 to 5 dry or moist Chroma: 3 or 4 dry or moist

Texture: silty clay loam, clay loam, or clay Calcium carbonate equivalent: 1 to 5 percent Reaction: slightly to moderately alkaline

#### **Tintero Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

mesic Ustic Haplargids Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, and valley

sides

Parent material: Eolian material and fan and slope

alluvium derived from sandstone

Slope range: 1 to 10 percent Elevation: 6,200 to 7,100 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

# **Typical Pedon**

Tintero fine sandy loam, in an area of mapping unit 205, Penistaja-Tintero complex, 1 to 10 percent

slopes; McKinley County, New Mexico; Bluewater Quadrangle; 1,200 feet north and 1,000 feet west of the southeast corner of sec. 33, T. 13 N., R. 10 W.; latitude 35 degrees, 18 minutes, 33 seconds and longitude 107 degrees, 53 minutes, 49 seconds.

A—0 to 4 inches; strong brown (7.5YR 4/6) fine sandy loam, strong brown (7.5YR 4/6) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few medium, common fine, and many very fine roots; common very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Bt—4 to 16 inches; yellowish red (5YR 4/6) fine sandy loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium, fine, and very fine roots; common very fine irregular pores; common distinct clay films bridging sand grains; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bk1—16 to 48 inches; light reddish brown (5YR 6/4) fine sandy loam, reddish brown (5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; common very fine irregular pores; violently effervescent; calcium carbonate occurs as few fine irregular seams; slightly alkaline (pH 7.8); clear smooth boundary.

Bk2—48 to 65 inches; reddish yellow (5YR 6/6) loamy fine sand, yellowish red (5YR 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; slightly effervescent; calcium carbonate is disseminated; slightly alkaline (pH 7.6).

# **Range in Characteristics**

Particle-size control section: 10 to 18 percent clay and greater than 50 percent sand

A horizon:

Hue: 7.5YR or 10YR Value: 4 or 5 moist Chroma: 2 to 6 moist

Bt horizon:

Hue: 5YR to 10YR Chroma: 4 or 6 moist

Textures: fine sandy loam or sandy loam Calcium carbonate equivalent: 1 to 5 percent

Bk horizons:

Hue: 5YR to 10YR

Value: 4 to 6 dry, 4 or 5 moist

Chroma: 4 or 6 moist

Textures: fine sandy loam, sandy loam, or loamy fine

sand

Reaction: slightly or moderately alkaline Calcium carbonate equivalent: 5 to 10 percent

#### **Todest Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Calcidic Haplustalfs Depth class: Moderately deep Drainage class: Well drained Permeability: Moderate Geomorphic position: Cuestas

Parent material: Eolian material and slope alluvium derived from limestone and sandstone

Slope range: 2 to 8 percent Elevation: 7,000 to 7,700 feet

Average annual air temperature: 49 to 53 degrees F Average annual precipitation: 13 to 16 inches

Frost-free period: 115 to 135 days

## **Typical Pedon**

Todest fine sandy loam, in an area of mapping unit 375, Todest-Shadilto complex, 2 to 8 percent slopes; McKinley County, New Mexico; Thoreau Quadrangle; 300 feet south and 300 feet east of the northwest corner of sec. 24, T. 14 N., R. 13 W.; latitude 35 degrees, 26 minutes, 09 seconds and longitude 108 degrees, 10 minutes, 27 seconds.

- A—0 to 1 inch; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; very slightly effervescent, 6 percent calcium carbonate equivalent; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Bt—1 to 3 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; few faint clay films bridging sand grains; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Btk1—3 to 10 inches; brown (7.5YR 4/4) sandy clay loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common fine irregular pores; many distinct clay films on ped faces and bridging sand grains; strongly effervescent; few very fine and fine masses of calcium carbonate, 5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Btk2—10 to 18 inches; pinkish gray (7.5YR 7/2) sandy

clay loam, brown (7.5YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common fine irregular pores; many distinct clay films on ped faces; violently effervescent; many fine masses and common fine concretions of calcium carbonate; 23 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—18 to 25 inches; pinkish white (7.5YR 8/2) loam, light brown (7.5YR 6/3) moist; weak fine and medium subangular blocky structure; common very fine and fine and few medium and coarse roots; common fine irregular pores; 5 percent gravel; violently effervescent; many fine masses and common fine concretions of calcium carbonate and coating rock fragments; 48 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

2R—25 inches; limestone.

## **Range in Characteristics**

Depth to lithic contact: 20 to 40 inches to limestone

Depth to calcic horizon: 8 to 30 inches

Particle-size control section: 18 to 35 percent clay and

greater than 30 percent sand

Reaction: slightly alkaline in the surface and moderately alkaline in the subsoil

A horizon:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4

Rock fragments: 0 to 10 percent gravel. Most fragments are limestone with some sandstone.

Percent calcium carbonate equivalent: 5 to 15 percent

Bt horizons:

Hue: 5YR or 7.5YR

Value: 4 to 7 dry, 3 to 6 moist Chroma: 2 to 4 dry, 3 or 4 moist

Texture: fine sandy loam or sandy clay loam Rock fragments: 0 to 30 percent limestone gravel Calcium carbonate equivalent: 0 to 15 percent

Btk and Bk horizons:

Hue: 7.5YR or 10YR

Value: 5 to 8 dry, 4 to 6 moist Chroma: 2 to 4 dry, 3 or 4 moist Texture: loam or sandy clay loam

Rock fragments: 5 to 15 percent total; 0 to 15 percent gravel and 0 to 10 percent cobbles. All fragments

are limestone.

Calcium carbonate equivalent: 5 to 40 percent but

ranging up to 50 percent in the lower parts of the Bk horizon.

## **Toldohn Series**

Taxonomic class: Clayey, mixed, superactive, nonacid, mesic, shallow Aridic Ustorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Hills, ridges, and breaks

Parent material: Slope alluvium over residuum derived

from shale

Slope range: 8 to 35 percent Elevation: 6,800 to 8,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Toldohn gravelly clay loam, in an area of mapping unit 350, Toldohn-Vessilla-Rock outcrop complex, 8 to 35 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 400 feet west and 600 feet south of the northeast corner of sec. 14, T. 10 N., R. 17 W.; latitude 35 degrees, 06 minutes, 11 seconds and longitude 108 degrees, 35 minutes, 36 seconds.

A—0 to 1 inches; light olive brown (2.5Y 5/4) gravelly clay loam, olive brown (2.5Y 4/4) moist; weak fine granular structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; about 25 percent by volume sandstone gravel and shale fragments; slightly effervescent; slightly alkaline (pH 7.4); clear smooth boundary.

2BC—4 to 11 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine and few medium roots; common fine shale fragments; slightly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

2Cr—11 inches; weakly consolidated shale.

## Range in Characteristics

Particle-size control section: 40 to 60 percent clay Depth to paralithic contact: 6 to 20 inches to shale Reaction: neutral or slightly alkaline

A horizon:

Hue: 10YR or 2.5Y Value: 3 or 4 moist Chroma: 3 or 4 moist Rock fragments: 0 to 35 percent total; 0 to 25 percent gravel; 0 to 5 percent cobbles; 0 to 5 percent stones. All fragments are sandstone.

C horizon:

Hue: 10YR or 2.5Y Value: 3 to 5 moist

Rock fragments: 0 to 10 percent gravel. All fragments

are sandstone.

## **Tsoodzil Series**

Taxonomic class: Fine, smectitic, frigid Vertic

Argiustolls

Depth class: Very deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava plateaus and cinder cones Parent material: Eolian material and slope alluvium

over residuum derived from basalt

Slope range: 5 to 55 percent Elevation: 7,600 to 9,200 feet

Mean annual air temperature: 40 to 45 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

#### **Typical Pedon**

Tsoodzil very gravelly silt loam in an area of mapping unit 410, Montillo-Tsoodzil complex, 5 to 35 percent slopes; McKinley County, New Mexico; Marquez Quadrangle; latitude 35 degrees, 20 minutes, 13 seconds and longitude 107 degrees, 20 minutes, 12 seconds.

The surface is covered by about 35 percent gravel, 10 percent cobbles, and 1 percent stones.

- A—0 to 3 inches; brown (7.5YR 4/2) very gravelly silt loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; common fine irregular pores; 35 percent gravel, 10 percent cobbles, and 1 percent stones; neutral (pH 6.6); clear smooth boundary.
- Bt—3 to 10 inches; dark reddish brown (5YR 3/2) silty clay loam, dark reddish brown (5YR 2.5/2) moist; hard, firm, sticky and plastic; many very fine and fine and few medium and coarse roots; common fine tubular pores; few vertical cracks 5 mm or more wide occur from 7 to 20 inches; common distinct clay films on faces of peds; 2 percent gravel and 3 percent cobbles; neutral (pH 6.6); clear wavy boundary.

Btss1—10 to 21 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/2) moist; moderate fine and medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; common very fine and fine and few medium roots; few fine tubular pores; many slickensides and pressure faces; few vertical cracks 5 mm or more wide occur from 7 to 20 inches; many prominent clay films on faces of peds and rock fragments; 2 percent gravel; neutral (pH 7.2); gradual irregular boundary.

Btss2—21 to 46 inches; reddish brown (5YR 4/4) clay, dark reddish brown (5YR 3/4) moist; moderate fine and medium angular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine and few medium roots; few fine tubular pores; many slickensides and pressure faces; many prominent clay films on faces of peds and rock fragments; 3 percent gravel and 2 percent cobbles; slightly alkaline (pH 7.4); gradual wavy boundary.

Btss3—46 to 70 inches; reddish brown (5YR 4/3) gravelly clay, dark reddish brown (5YR 3/3) moist; moderate fine and medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine and few medium roots; common fine tubular pores; few slickensides and pressure faces; many prominent clay films on faces of peds and rock fragments; 10 percent gravel and 5 percent cobbles; slightly alkaline (pH 7.4).

## **Range in Characteristics**

Particle-size control section: 40 to 60 percent clay with 0 to 30 percent rock fragments

Mollic epipedon thickness: 21 to 40 inches

Depth to visible secondary carbonates (when present): 25 to 45 inches with 0 to 10 percent calcium carbonate equivalent

Vertic features: Depth to slickensides and pressure faces is 7 to 21 inches; subsurface vertical cracks occur from 5 to 25 inches.

A horizon:

Hue: 7.5YR or 10YR

Value: 3 to 5 dry, 2 or 3 moist

Chroma: 2 or 3 dry
Texture: silt loam or loam

Rock fragments: 35 to 50 percent total; 15 to 40 percent gravel; 5 to 35 percent cobbles; and 0 to 1 percent stones. All fragments are basalt.

Reaction: slightly acid or neutral

Bt and Btss horizons: *Hue*: 5YR, 7.5YR, or 10YR *Value*: 3 to 5 dry, 2.5 or 3 moist

Chroma: 2 to 4 dry or moist

Texture: clay, clay loam, or silty clay loam with greater

than 35 percent clay

Rock fragments: 0 to 25 percent total; 0 to 15 percent gravel; 0 to 5 percent cobbles; and 0 to 1 percent

stones. All fragments are basalt. *Reaction:* neutral or slightly alkaline

Btk horizon (when present):

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 or 4 moist Chroma: 4 or 6 dry or moist Texture: clay or clay loam

Rock fragments: 5 to 70 percent total; 5 to 50 percent gravel; 5 to 10 percent cobbles; and 0 to 5 percent stones. All fragments are basalt.

(Note: When a Btk horizon has greater than 35 percent rock fragments, it is either too thin or is below the particle size control section to affect the particle size class.)

#### **Tsosie Series**

*Taxonomic class:* Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torriorthents

Depth class: Very deep Drainage class: Well drained Permeability: Moderately slow

Geomorphic position: Valley sides and valley floors Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 1 to 3 percent Elevation: 6,400 to 6,800 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 9 to 10 inches Frost-free period: 100 to 135 days

#### **Typical Pedon**

Tsosie fine sandy loam, in an area of mapping unit 10, Tsosie-Councelor-Blancot fine sandy loams, 1 to 3 percent slopes; McKinley County, New Mexico; Ojo Encino Mesa Quadrangle; 2,000 feet east and 1,500 feet south of the northeast corner of sec. 9, T. 20 N., R. 5 W.; latitude 35 degrees, 58 minutes, 58 seconds and longitude 107 degrees, 22 minutes, 18 seconds.

A—0 to 2 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots;

common fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.

- C1—2 to 7 inches; yellowish brown (10YR 5/4) fine sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common medium, fine, and very fine roots; few very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- C2—7 to 13 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few medium and common fine and very fine roots; few fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- C3—13 to 35 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few medium and fine and common very fine roots; few very fine irregular pores; slightly alkaline (pH 7.8); clear smooth boundary.
- C4—35 to 47 inches; yellowish brown (10YR 5/4) clay loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine irregular pores; slightly alkaline (pH 7.6); abrupt smooth boundary.
- Ck—47 to 65 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine irregular pores; very few very fine masses of calcium carbonate; slightly effervescent; slightly alkaline (pH 7.8).

#### Range in Characteristics

Particle-size control section: 18 to 35 percent clay Calcium carbonate equivalent: 1 to 5 percent

A horizon:

Value: 4 or 5 moist Sodicity: SAR of 0 to 5

Reaction: neutral or slightly alkaline

C horizon:

Value: 3 to 5 moist Chroma: 3 or 4

Texture: fine sandy loam, silt loam, sandy clay loam,

clay loam, silty clay loam, or loam

Sodicity: SAR of 10 to 20

Reaction: slightly to strongly alkaline

#### **Tuces Series**

Taxonomic class: Fine, mixed, superactive, mesic

Aridic Haplustepts

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Cuestas

Parent material: Slope alluvium and colluvium over residuum derived from shale and sandstone

Slope range: 20 to 40 percent Elevation: 7,400 to 8,000 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Tuces extremely gravelly clay loam in an area of mapping unit 345 Rock outcrop-Tuces complex, 20 to 70 percent slopes; McKinley County, New Mexico; Cottonwood Canyon Quadrangle; 2,600 feet east and 220 feet north of the southwest corner of sec. 19, T. 13 N., R. 13 W.; latitude 35 degrees, 20 minutes, 30 seconds and longitude 108 degrees, 15 minutes, 19 seconds.

The surface is covered by about 40 percent gravel, 20 percent cobbles, 5 percent stones, and 10 percent boulders.

- A—0 to 1 inch; reddish brown (2.5YR 4/4) extremely gravelly clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium platy structure; slightly hard, firm, sticky and plastic; common fine and few medium roots; few fine vesicular pores; 40 percent gravel, 20 percent cobbles, 5 percent stones, and 10 percent boulders; strongly effervescent; 5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt wavy boundary.
- Bk1—1 to 4 inches; reddish brown (2.5YR 4/4) clay, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots; few fine irregular pores; strongly effervescent; few very fine masses of calcium carbonate; 3 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear wavy boundary.
- Bk2—4 to 24 inches; about 95 percent of the matrix is weak red (10R 4/4) clay, dusky red (10R 3/4) moist with the other 5 percent light olive gray (5Y 6/2), olive gray (5Y 5/2) moist; weak medium and coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; common fine irregular pores; many angular soft shale fragments; strongly effervescent; few very fine masses of calcium carbonate; 5 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); gradual wavy boundary.

Cr—24 inches; (95 percent) dark yellowish brown (10YR 3/6) and (5 percent) olive gray (5Y 5/2) shale; very slightly effervescent.

## Range in Characteristics

Particle-size control section: 40 to 60 percent clay Depth to paralithic contact: 20 to 40 inches to shale Calcium carbonate equivalent: 2 to 10 percent Reaction: slightly alkaline in the surface and moderately alkaline in the subsoil

A horizon:

Hue: 10R to 7.5YR

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 3 or 4

Rock fragments: 40 to 80 percent total; 20 to 60 percent gravel or channers; 5 to 25 percent cobbles; 2 to 10 percent stones; 0 to 10 percent boulders. All fragments are sandstone.

Bk or Bw horizons: Hue: 10R, 2.5YR, or 5YR Value: 4 or 5 dry, 2 to 4 moist

Chroma: 2 to 4

Rock fragments: 0 to 5 percent gravel; 0 to 5 percent cobbles. All fragments are sandstone.

## **Valnor Series**

Taxonomic class: Fine, mixed, superactive, frigid

Typic Haplustalfs

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Hills and ridges

Parent material: Slope alluvium derived from shale

Slope range: 2 to 15 percent Elevation: 7,100 to 7,800 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

#### Typical Pedon

Valnor clay loam, in an area of mapping unit 403, Valnor-Techado complex, 2 to 25 percent slopes; McKinley County, New Mexico; Shoemaker Canyon Quadrangle; 500 feet south and 800 feet west of the northeast corner of sec. 25, T. 9 N., R. 17 W.; latitude 34 degrees, 59 minutes, 14 seconds and longitude 108 degrees, 34 minutes, 38 seconds.

A—0 to 2 inches; dark yellowish brown (10YR 4/4) clay loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, friable, slightly sticky and

- slightly plastic; few very fine and fine roots; few very fine irregular pores; 10 percent gravel; neutral (pH 6.8); abrupt smooth boundary.
- Bw—2 to 4 inches; dark yellowish brown (10YR 4/4) clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.
- Bt—4 to 20 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; strong medium angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; common very fine, fine, and medium, and few coarse roots; few very fine tubular and irregular pores; many prominent clay films on faces of peds; neutral (pH 7.2); abrupt smooth boundary.
- 2Ck—20 to 34 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm, very sticky and very plastic; few very fine and fine roots; few very fine irregular pores; strongly effervescent; few fine concretions and common medium masses and seams of calcium carbonate; slightly alkaline (pH 7.6); abrupt smooth boundary.

2Cr—34 inches; shale.

## Range in Characteristics

Particle-size control section: 35 to 45 percent clay Depth to a paralithic contact: 20 to 40 inches to shale Reaction: Neutral or slightly alkaline

A horizon: Hue: 10YR

Value: 4 or 5 dry, 3 to 5 moist Chroma: 2 to 4 dry and moist

Rock fragments: 0 to 10 percent sandstone gravel

B horizons:

Hue: 7.5YR or 10YR

Value: 4 or 5 dry; 3 or 4 moist

Chroma: 3 or 4 moist

C horizon (when present): Hue: 10YR or 2.5Y

Value: 4 to 6 moist Chroma: 4 through 6 moist

Calcium carbonate equivalent: 1 to 5 percent

Most pedons do not have visible carbonates.

## **Venadito Series**

Taxonomic class: Very-fine, smectitic, mesic Chromic Haplotorrerts

Depth class: Very deep

Drainage class: Well or moderately well drained

Permeability: Very slow

Geomorphic position: Valley sides and valley floors

Parent material: Fan and stream alluvium derived from

shale

Slope range: 0 to 3 percent Elevation: 6,100 to 7,100 feet

Mean annual air temperature: 49 to 53 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Venadito clay, in an area of mapping unit 335, Venadito clay, 1 to 3 percent slopes; McKinley County, New Mexico; Thoreau NE Quadrangle; 1,400 feet west and 300 feet north of the southeast corner of sec. 6, T. 13 N., R. 11 W.; latitude 35 degrees, 22 minutes, 04 seconds and longitude 108 degrees, 02 minutes, 21 seconds.

- A—0 to 3 inches; dark reddish brown (2.5YR 3/4) clay, dark reddish brown (2.5YR 3/4) moist; strong fine granular structure; slightly hard, very firm, very sticky and very plastic; few fine and very fine roots; common fine irregular pores; many 3-cm wide vertical cracks; strongly effervescent; moderately alkaline (pH 8.0), abrupt smooth boundary.
- BCss1—3 to 30 inches; reddish brown (2.5YR 4/4) clay, dark reddish brown (2.5YR 3/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few very fine irregular pores; common slickensides tilted 30 degrees from the horizontal and common pressure faces; many 2 cm-wide vertical cracks; strongly effervescent; moderately alkaline (pH 8.4), gradual smooth boundary.
- BCss2—30 to 65 inches; reddish brown (2.5YR 4/4) clay, dark reddish brown (2.5YR 3/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine irregular pores; few slickensides tilted 30 degrees from the horizontal and common pressure faces; strongly effervescent; moderately alkaline (pH 8.2).

# Range in Characteristics

Particle-size control section: 60 to 80 percent clay Vertic features: Gilgai microrelief ranges from less than 1 inch up to 6 inches and vertical cracks up to 1 inch wide extend from the surface to a depth of 40 inches or more.

Salinity: EC of 2 to 16 mmhos/cm

Sodicity: SAR of 0 to 10

Reaction: slightly or moderately alkaline

A horizon:

Hue: 2.5YR or 5YR

Value: 3 to 5 dry or 3 or 4 moist

BC horizons:

Hue: 2.5YR or 5YR

Value: 4 to 6 dry, 3 or 4 moist

Chroma: 3 or 4 moist

Texture: Mostly clay and silty clay with few pedons having sandy clay textures below 30 inches. Calcium carbonate equivalent: 5 to 10 percent

Some pedons may have an intermittent water table below a depth of 40 inches during March through November.

## Venzuni Series

Taxonomic class: Very-fine, smectitic, mesic Aridic

Haplusterts

Depth class: Very deep Drainage class: Well drained Permeability: Very slow

Geomorphic position: Valley floors and valley sides Parent material: Fan and stream alluvium derived from

shale

Slope range: 1 to 6 percent Elevation: 6,700 to 7,600 feet

Mean annual air temperature: 46 to 54 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Venzuni silty clay, in an area of mapping unit 325, Venzuni silty clay, 1 to 3 percent slopes; McKinley County, New Mexico; Burned Timber Quadrangle; 700 feet north and 1,200 feet east of the southwest corner of sec. 20, T12N, R.16W; latitude 35 degrees, 14 minutes, 58 seconds and longitude 108 degrees, 33 minutes. 06 seconds.

- A—0 to 2 inches; reddish brown (2.5YR 4/4) silty clay, dark reddish brown (2.5YR 3/4) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, sticky and plastic; many very fine and fine roots; few fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.
- BC—2 to 12 inches; reddish brown (2.5YR 4/4) silty clay, dark reddish brown (2.5YR 3/4) moist; massive; very hard, very firm, very sticky and very

plastic; common very fine and fine roots; common fine irregular pores; common pressure faces; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bss1—12 to 19 inches; dark reddish brown (2.5YR 3/4) clay, dark reddish brown (5YR 3/3) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common fine irregular pores; many pressure faces and few slickensides; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bss2—19 to 46 inches; reddish brown (2.5YR 4/4) clay, dark reddish brown (2.5YR 3/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine irregular pores; many pressure faces and common slickensides; strongly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary.

2Bss3—46 to 65 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 3/4) moist; massive; extremely hard, extremely firm; very sticky and very plastic; few very fine roots; few very fine irregular pores; common pressure faces and few slickensides; strongly effervescent; slightly alkaline (pH 7.8).

#### Range in Characteristics

Particle-size control section: 60 to 80 percent clay Vertic features: slight gilgai microrelief on the surface, self-mulching surface, 0.5 inch-wide vertical cracks extend from the surface to 20 inches or more, pressure faces and slickensides are present below 2 inches.

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 0 to 5

Calcium carbonate equivalent: 5 to 10 percent Rock fragments: 0 to 5 percent sandstone and

siliceous gravel

Reaction: slightly or moderately alkaline

A horizon:

Hue: 2.5YR or 5YR Value: 3 or 4 dry

Calcium carbonate equivalent: 5 to 10 percent

Salinity: EC of 2 to 4 mmhos/cm

Sodicity: SAR of 0 to 5 BC and Bss horizons:

Hue: 2.5YR or 5YR
Value: 3 or 4 dry
Chroma: 3 or 4 moist
Texture: clay or silty clay

Calcium carbonate equivalent: 5 to 10 percent

Salinity: EC of 2 to 4 mmhos/cm

Sodicity: SAR of 0 to 5

2Bss horizon:

Hue: 7.5YR or 10YR Value: 3 or 4 dry Chroma: 3 or 4 moist

Calcium carbonate equivalent: 5 to 10 percent

Salinity: EC of 2 to 4 mmhos/cm

Sodicity: SAR of 0 to 5

## **Vessilla Series**

Taxonomic class: Loamy, mixed, active, calcareous,

mesic Aridic Lithic Ustorthents

Depth class: Very shallow and shallow

Drainage class: Well drained Permeability: Moderately rapid

Geomorphic position: Mesas, cuestas, hills, ridges,

and breaks

Parent material: Eolian material and slope alluvium

derived from sandstone Slope range: 2 to 15 percent Elevation: 6,500 to 8,000 feet

Mean annual air temperature: 46 to 49 degrees F Mean annual precipitation: 13 to 16 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Vessilla fine sandy loam, in an area of mapping unit 350, Toldohn-Vessilla-Rock outcrop complex, 8 to 35 percent slopes; McKinley County, New Mexico; Pescado Quadrangle; 1,200 feet south and 200 feet west of the northeast corner of sec. 14, T. 10 N., R. 17 W.; latitude 35 degrees, 06 minutes, 04 seconds and longitude 108 degrees, 35 minutes, 33 seconds.

- A—0 to 2 inches; very pale brown (10YR 7/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular and irregular pores; 10 percent gravel; slightly effervescent; neutral (pH 7.2); clear smooth boundary.
- C—2 to 11 inches; brown (10YR 5/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine irregular pores; 3 percent gravel; slightly effervescent; neutral (pH 7.2); abrupt smooth boundary.

2R—11 inches; sandstone bedrock.

## Range in Characteristics

Particle-size control section: 12 to 20 percent clay Rock fragments: 0 to 15 percent gravel; 0 to 10

percent cobbles

Depth to a lithic contact: 5 to 20 inches to sandstone Calcium carbonate equivalent: 1 to 5 percent Reaction: neutral in the surface and slightly to moderately alkaline in the substratum

A horizon:

Hue: 7.5YR or 10YR

Value: 5 to 7 dry, 4 or 5 moist Chroma: 3 to 6 dry or moist

C horizon:

Hue: 7.5YR or 10YR

Value: 3 to 5 moist, 5 or 6 dry Chroma: 4 to 6 moist, 3 or 4 dry

## Viuda Series

Taxonomic class: Clayey, mixed, superactive, mesic

Lithic Ustic Haplargids

Depth class: Shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Lava flows

Parent material: Eolian and alluvial material derived

from basalt and sandstone Slope range: 1 to 5 percent Elevation: 6,700 to 7,000 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Viuda very cobbly fine sandy loam, in an area of mapping unit 215, Viuda-Penistaja-Rock outcrop complex, 1 to 5 percent slopes; McKinley County, New Mexico; Bluewater Quadrangle; 1,000 feet west and 1,700 feet north of the southeast corner of sec. 35, T. 13 N., R. 11 W.; latitude 35 degrees, 18 minutes, 35 seconds and longitude 107 degrees, 58 minutes, 01 second.

The surface is covered by about 20 percent gravel, 20 percent cobbles, and 5 percent stones.

A—0 to 3 inches; brown (7.5YR 5/4) very cobbly fine sandy loam, dark brown (7.5YR 3/4) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; many fine and very fine roots; common fine and very fine irregular pores;

20 percent gravel, 20 percent cobbles, and 5 percent stones; neutral (pH 7.2); abrupt smooth boundary.

Bt—3 to 15 inches dark brown (7.5YR 4/4) clay, strong brown (7.5YR 4/6) moist; strong fine angular blocky structure; hard, firm, sticky and plastic; common fine and many very fine roots; few very fine tubular pores; many distinct clay films on faces of peds and lining pores; 10 percent cobbles; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bk—15 to 17 inches; reddish yellow (7.5YR 6/6) cobbly clay loam, brown (7.5YR 5/4) moist; massive; hard, firm, sticky and plastic; few fine and very fine roots; few very fine irregular pores; 5 percent gravel and 10 percent cobbles; violently effervescent; many medium irregular masses of calcium carbonate; moderately alkaline (pH 8.2); abrupt wavy boundary.

2R-17 inches; basalt.

## Range in Characteristics

Particle-size control section: 35 to 50 percent clay Depth to a lithic contact: 10 to 20 inches to basalt Reaction: neutral in the surface and slightly to moderately alkaline in the subsoil

A horizon:

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 5

Rock fragments: 35 to 60 percent gravel and cobbles.

All fragments are sandstone.

Bt horizon:

Value: 4 or 5 dry, 3 or 4 moist

Chroma: 4 or 6

Rock fragments: 5 to 15 percent gravel and cobbles. All fragments are sandstone.

Bk horizon: Value: 4 to 6 Chroma: 4 or 6

Rock fragments: 15 to 25 percent gravel and cobbles.

All fragments are sandstone.

Calcium carbonate equivalent: 1 to 15 percent

## **Westmion Series**

Taxonomic class: Clayey, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents

Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Mesas and cuestas

Parent material: Slope alluvium and colluvium over residuum derived from shale

Slope range: 30 to 50 percent Elevation: 6,400 to 8,100 feet

Mean annual air temperature: 49 to 54 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Westmion gravelly clay loam, in an area of mapping unit 290, Rock outcrop-Westmion-Skyvillage complex, 30 to 80 percent slopes; McKinley County, New Mexico; Goat Mountain Quadrangle; 100 feet south and 100 feet west of the northeast corner of sec. 24, T. 14 N., R. 11 W.; latitude 35 degrees, 26 minutes, 08 seconds and longitude 107 degrees, 56 minutes, 39 seconds.

The surface is covered by about 20 percent gravel and 10 percent channers.

- A—0 to 2 inches; light olive brown (2.5Y 5/4) gravelly clay loam, olive brown (2.5Y 4/4) moist; weak fine granular structure; soft, firm, sticky and plastic; few very fine and fine roots; few very fine irregular pores; 20 percent gravel and 10 percent channers; slightly effervescent; neutral (pH 7.2); abrupt smooth boundary.
- C—2 to 14 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; few very fine irregular pores; slightly effervescent; neutral (pH 7.2); gradual smooth boundary.

Cr—14 inches; shale.

## **Range in Characteristics**

Particle-size control section: 35 to 60 percent clay Depth to paralithic contact: 6 to 20 inches to shale Calcium carbonate equivalent: 1 to 5 percent Reaction: neutral to moderately alkaline

A horizon:

Hue: 10YR or 2.5Y

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist

Rock fragments: 30 to 90 percent total; 20 to 80 percent gravel or channers; 0 to 10 percent cobbles; 0 to 5 percent stones. All fragments are

sandstone.

Hue: 10YR or 2.5Y

C horizon:

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry or moist

Texture: clay or clay loam

Rock fragments: 0 to 10 percent total; 0 to 10 percent

gravel; 0 to 5 percent cobbles

#### **Yelives Series**

Taxonomic class: Coarse-loamy, mixed, superactive,

calcareous, mesic Typic Torrifluvents

Depth class: Very deep

Drainage class: Somewhat excessively drained Permeability: Moderate to moderately rapid Geomorphic position: Valley sides and valley floors Parent material: Fan and stream alluvium derived from

sandstone and shale Slope range: 1 to 3 percent Elevation: 5,400 to 6,100 feet

Mean annual air temperature: 50 to 55 degrees F

Mean annual precipitation: 7 to 9 inches Frost-free period: 130 to 150 days

## **Typical Pedon**

Yelives fine sandy loam in an area of mapping unit 111, Yelives fine sandy loam, 1 to 3 percent slopes; Navajo Reservation; San Juan County, New Mexico; The Pillar 3 NE Quadrangle; latitude 36 degrees, 08 minutes, 32 seconds and longitude 108 degrees 21 minutes, 15 seconds.

- A—0 to 2 inches; light olive brown (2.5Y 5/4) fine sandy loam, olive brown (2.5Y 4/4) moist; weak very fine granular structure; loose, soft, nonsticky and nonplastic; few very fine roots; 2 percent gravel; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Ck1—2 to 12 inches; light olive brown (2.5Y 5/4) fine sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine irregular pores; pockets of very finely stratified silt; 2 percent gravel; very slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Ck2—12 to 30 inches; light olive brown (2.5Y 5/4) loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine irregular pores; 5 percent gravel; very slightly effervescent; few very fine masses of calcium carbonate; moderately alkaline (pH 8.0); abrupt smooth boundary.
- C1—30 to 41 inches; light yellowish brown (2.5Y 6/4) loam, light olive brown (2.5Y 5/4) moist; massive;

loose, very friable, nonsticky and nonplastic; few very fine and fine roots; 1 percent gravel; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

- C2—41 to 56 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, light olive brown (2.5Y 6/4) moist; single grain; loose, soft, nonsticky and nonplastic; few very fine roots; 10 percent gravel; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- C3—56 to 80 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, light olive brown (2.5Y 5/4) moist; single grain; loose, very friable, nonsticky and nonplastic; few very fine roots; fine stratification of silt and very fine sand; 1 percent gravel; very slightly effervescent; moderately alkaline (8.0).

## **Range in Characteristics**

Particle-size control section: 8 to 20 percent clay Rock fragment content: 0 to 10 percent sandstone and porcelanite gravel

Calcium carbonate equivalent: 0 to 5 percent

Salinity: EC of 0 to 2 mmhos/cm

Sodicity: SAR of 0 to 4

Reaction: Slightly to moderately alkaline

A horizon:

Hue: 2.5Y or 10YR

Value: 4 or 5, dry and moist Chroma: 4 dry or moist

Textures: fine sandy loam or loamy fine sand

Ck and C horizons: *Hue:* 2.5Y or 10YR

Value: 5 or 6, dry and moist Chroma: 4 or 5, dry or moist

Texture: loam, fine sandy loam, or loamy fine sand

## **Zaster Series**

Taxonomic class: Loamy-skeletal, mixed, superactive,

mesic Typic Calciustolls Depth class: Moderately deep Drainage class: Well drained Permeability: Moderately rapid Geomorphic position: Cuestas

Parent material: Slope alluvium and colluvium derived

from sandstone and limestone Slope range: 15 to 40 percent Elevation: 7,000 to 7,600 feet

Mean annual air temperature: 45 to 47 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Zaster extremely gravelly loam, in an area of mapping unit 412, Rock outcrop-Rionutria-Zaster association, 15 to 80 percent slopes McKinley County, New Mexico; Upper Nutria Quadrangle; about 1,250 feet north and 1,000 feet east of the southwest corner of sec. 4, T. 12 N., R. 16 W.; latitude 35 degrees, 17 minutes, 44 seconds and longitude 108 degrees, 32 minutes, 06 seconds.

The surface is covered by about 50 percent gravel, 15 percent cobbles, and 10 percent stones.

- A—0 to 3 inches; brown (7.5YR 4/3) extremely gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; 50 percent gravel, 15 percent cobbles, 10 percent stones; strongly effervescent; 4 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear wavy boundary.
- Bk1—3 to 11 inches; brown (7.5YR 4/3) gravelly loam, dark brown (7.5YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and common medium roots; 15 percent gravel, 5 percent cobbles; strongly effervescent; many fine and medium masses and many fine concretions of calcium carbonate; 13 percent calcium carbonate equivalent; moderately alkaline; clear wavy boundary.
- Bk2—11 to 27 inches; reddish brown (5YR 5/3) extremely gravelly loam, reddish brown (5YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine, medium, and few coarse roots; 40 percent gravel, 20 percent cobbles, 10 percent stones; violently effervescent; many fine, medium, and many fine concretions of calcium carbonate; 23 percent calcium carbonate equivalent; moderately alkaline; abrupt wavy boundary.
- 2Cr—27 to 37 inches; weathered sandstone and dolomitic limestone.
- R-37 inches; San Andreas limestone.

## Range in Characteristics

Particle-size control section: 10 to 20 percent clay and

35 to 70 percent rock fragment

Depth to lithic contact: 20 to 40 inches to dolomitic

limestone

Depth to calcic horizon: 5 to 18 inches

Reaction: moderately alkaline

A horizon:

Chroma: 2 or 3

Rock fragments: 35 to 70 percent total; 20 to 50 percent gravel, 0 to 15 percent cobbles, 0 to 10 percent stones. All fragments are limestone.

Bk horizon:

Hue: 5YR or 7.5YR

Value: 4 or 5 dry, 3 or 4 moist

Rock fragments: 35 to 60 percent total: 15 to 25 percent gravel, 10 to 25 percent cobbles, 0 to 20 percent stones. All fragments are limestone.

Calcium carbonate equivalent: 10 to 25 percent

#### Zia Series

Taxonomic class: Coarse-loamy, mixed, superactive,

calcareous, mesic Ustic Torriorthents

Depth class: Very deep

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Geomorphic position: Valley sides and valley floors Parent material: Eolian material and fan and stream

alluvium derived from sandstone

Slope range: 1 to 5 percent Elevation: 6,000 to 6,900 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

#### **Typical Pedon**

Zia fine sandy loam, in an area of mapping unit 230, Sparank-San Mateo-Zia complex, 0 to 3 percent slopes; McKinley County, New Mexico; Goat Mountain Quadrangle; 1,000 feet west and 400 feet south of the northeast corner of sec. 14, T. 14 N., R. 11 W.; latitude 35 degrees, 26 minutes, 55 seconds and longitude 107 degrees, 58 minutes, 12 seconds.

- A—0 to 3 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; common fine vesicular and irregular pores; very slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Bw—3 to 12 inches; yellowish brown (10YR 5/4) fine sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common fine irregular pores; calcium carbonate is disseminated; strongly

- effervescent; slightly alkaline (pH 7.6); clear wavy boundary.
- 2C1—12 to 20 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; common fine irregular pores; calcium carbonate is disseminated; slightly to strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- 2C2—20 to 28 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist, massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; common fine irregular pores; calcium carbonate is disseminated; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- 2C3—28 to 70 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; common fine irregular pores; calcium carbonate is disseminated; slightly to strongly effervescent; slightly alkaline (pH 7.8).

## **Range in Characteristics**

Particle-size control section: 8 to 18 percent clay Calcium carbonate equivalent: 1 to 5 percent

A horizon:

Hue: 5YR to 10YR

Value: 4 or 5 dry; 3 or 4 moist Chroma: 2 to 6 dry; 2 to 4 moist

Bw horizon (when present):

Hue: 5YR to 10YR Value: 3 or 4 moist Chroma: 3 to 6 moist

Texture: fine sandy loam or very fine sandy loam

C horizons:

Hue: 5YR to 10YR Value: 3 to 5 moist Chroma: 2 to 6 moist

Texture: fine sandy loam, sandy loam, or loamy sand Rock fragments: 0 to 5 percent sandstone gravel

Reaction: slightly or moderately alkaline

## **Zunalei Series**

Taxonomic class: Fine-loamy, mixed, superactive,

mesic Typic Haplustalfs Depth class: Very deep Drainage class: Well drained

Permeability: Moderate

Geomorphic position: Cuestas and valley sides Parent material: Eolian material and fan alluvium

derived from sandstone Slope range: 2 to 10 percent Elevation: 7,000 to 7,500 feet

Mean annual air temperature: 45 to 48 degrees F

Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Zunalei loamy fine sand, in an area of mapping unit 414, Zunalei-Corzuni loamy fine sands, 2 to 10 percent slopes; McKinley County, New Mexico; Ramah Quadrangle; about 1,800 feet south and 100 feet east of the northwest corner of sec. 13, T. 11 N., R. 16 W.; latitude 35 degrees, 11 minutes, 12 seconds and longitude 108 degrees, 29 minutes, 09 seconds.

- A—0 to 1 inch; brown (7.5YR 5/4) loamy fine sand, brown (7.5YR 4/3) moist; single grain; soft, loose, nonsticky and nonplastic; few very fine roots; neutral (pH 7.0); abrupt smooth boundary.
- AB—1 to 6 inches; brown (7.5YR 5/3) fine sandy loam, dark brown (7.5YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few very fine irregular pores; neutral (pH 7.0); abrupt smooth boundary.
- Bt1—6 to 20 inches; brown (7.5YR 5/4) sandy clay loam, brown (7.5YR 4/4) moist; strong fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine irregular pores; many distinct clay films on faces of peds; neutral (pH 7.0); clear smooth boundary.
- Bt2—20 to 26 inches thick; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; few very fine irregular pores; common distinct clay films on faces of peds; slightly alkaline (pH 7.4); clear smooth boundary.
- BCt—26 to 50 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine irregular pores; few faint clay films bridging sand grains; slightly alkaline (pH 7.4); clear smooth boundary.
- BCk—50 to 70 inches; strong brown (7.5YR 5/6) fine sandy loam, strong brown (7.5YR 4/6) moist; weak

fine subangular blocky structure: slightly hard, very friable, nonsticky and nonplastic; few very fine roots; 1 percent gravel size sandstone fragments; very slightly effervescent; few very fine masses of calcium carbonate; slightly alkaline (pH 7.8).

## **Range in Characteristics**

Particle-size control section: 18 to 35 percent clay Depth to secondary calcium carbonates (when present): 28 to 54 inches and 0 to 5 percent calcium carbonate equivalent.

A and AB horizons: Hue: 7.5YR or 10YR Value: 5 dry, 3 or 4 moist

Chroma: 2 to 4 Reaction: neutral

Bt horizon:

Hue: 7.5YR or 10YR Value: 5 or 6 dry, 4 moist

Chroma: 4 or 6

Textures: sandy clay loam or clay loam Reaction: neutral to slightly alkaline

BC horizons:

Hue: 2.5YR to 7.5YR Value: 5 dry, 3 or 4 moist

Chroma: 4

Textures: fine sandy loam, sandy clay loam, or clay

loam

Reaction: slightly to moderately alkaline

Some pedons have a Btk horizon.

#### Zuni Series

Taxonomic class: Fine, mixed, superactive, frigid

Typic Haplustalfs

Depth class: Moderately deep Drainage class: Well drained

Permeability: Slow

Geomorphic position: Igneous domes in mountains Parent material: Residuum derived from gneissic-

granite

Slope range: 1 to 15 percent Elevation: 7,800 to 8,200 feet

Mean annual air temperature: 40 to 45 degrees F Mean annual precipitation: 16 to 20 inches

Frost-free period: 90 to 110 days

## **Typical Pedon**

Zuni gravelly sandy loam, in an area of mapping unit 408, Mirabal-Zuni complex, 1 to 40 percent slopes; McKinley County, New Mexico; Upper Nutria

Quadrangle; 900 feet east and 300 feet south of the northwest corner of sec. 14, T. 13 N., R. 16 W.; latitude 35 degrees, 21 minutes, 49 seconds and longitude 108 degrees, 30 minutes, 28 seconds.

The surface is covered by 30 percent gravel and 1 percent cobbles.

Oi—0 to 1 inches: slightly decomposed pine needles.

A—1 to 3 inches; brown (7.5YR 5/2) gravelly sandy loam, dark brown (7.5YR 4/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine irregular pores; 30 percent gravel and 1 percent cobbles; neutral (pH 6.8); abrupt wavy boundary.

Bt1—3 to 18 inches; red (2.5YR 5/6) gravelly sandy clay, red (2.5YR 4/6) moist; strong fine subangular blocky structure; very hard, very firm, sticky and plastic; common fine and few moderate and coarse roots; few very fine irregular pores; 30 percent gravel and 1 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt2—18 to 27 inches; red (2.5YR 5/6) gravelly sandy clay, red (2.5YR 4/6) moist; strong very fine and fine subangular blocky structure; very hard, very firm, sticky and plastic; common very fine, fine, and few medium roots; few very fine irregular pores; common distinct clay films on faces of peds; 28 percent gravel; neutral (pH 7.2); abrupt wavy boundary.

R—27 inches; gneissic-granite.

#### Range in Characteristics

Particle-size control section: 35 to 50 percent clay and 25 to 35 percent rock fragments

Depth to a lithic contact: 20 to 40 inches

Reaction: slightly acid to neutral

A horizon:

Hue: 5YR to 10YR

Value: 5 or 6 dry, 3 or 4 moist

Chroma: 2

Textures: sandy loam or sandy clay loam

Rock fragments: 5 to 35 percent gravel and cobble

size gneissic-granite fragments

Bt horizons:

Hue: 2.5YR to 7.5YR Value: 4 to 6 dry, 4 moist

Chroma: 4 or 6

Textures: sandy clay or sandy clay loam

Rock fragments: 25 to 35 percent gravel size gneissic-

granite fragments

Some pedons have an E horizon that ranges in thickness from 5 to 12 inches.

#### **Zuniven Series**

Taxonomic class: Fine-silty, mixed, superactive, calcareous, mesic Aridic Ustifluvents

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Moderately slow Geomorphic position: Valley floors

Parent material: Stream alluvium derived from

sandstone and shale Slope range: 0 to 2 percent Elevation: 6,200 to 6,500 feet

Mean annual air temperature: 49 to 54 degrees F Mean annual precipitation: 10 to 13 inches

Frost-free period: 120 to 140 days

## **Typical Pedon**

Zuniven loamy fine sand, in an area of mapping unit 52, Zuniven loamy fine sand, 0 to 2 percent slopes; McKinley County, New Mexico; Zuni Quadrangle; 2,900 feet south and 600 feet west of the northeast corner of sec. 18, T. 10 N., R. 18 W.; latitude 35 degrees, 05 minutes, 48 seconds and longitude 108 degrees, 46 minutes, 11 seconds.

- A—0 to 6 inches; reddish yellow (7.5YR 6/6) loamy fine sand, strong brown (7.5YR 4/6) moist; single grain; loose, very friable, nonsticky and nonplastic; many very fine and common fine roots; common very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.4); abrupt wavy boundary.
- C1—6 to 12 inches; reddish yellow (7.5YR 6/6) loamy fine sand, strong brown (7.5YR 4/6) moist; single grain; loose, very friable, nonsticky and nonplastic; many very fine and common fine roots; common very fine irregular pores; slightly effervescent; slightly alkaline (pH 7.4); abrupt wavy boundary.
- C2—12 to 17 inches; dark yellowish brown (10YR 4/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; common fine irregular and few fine tubular pores; strongly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.
- C3—17 to 22 inches; brown (7.5YR 5/4) silt loam, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; common fine irregular and few fine tubular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.
- C4—22 to 33 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine and fine and few medium roots; common fine irregular and few fine tubular pores; slightly

effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

C5—33 to 42 inches; brown (10YR5/3) silty clay loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; common irregular and few fine tubular pores; slightly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

C6—42 to 65 inches; yellowish brown (10YR 5/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular pores; slightly effervescent; slightly alkaline (pH 7.6).

# Range in Characteristics

Particle-size control section: 20 to 35 percent clay, less that 15 percent coarser than very fine sand Calcium carbonate equivalent: 0 to 5 percent Reaction: slightly to moderately alkaline

A horizon:

Hue: 7.5YR or 10YR

Value: 3 to 6 dry, 3 to 5 moist

Chroma: 4 to 8

C horizon:

Hue: 7.5YR or 10YR

Value: 4 to 6 dry, 3 to 6 moist

Chroma: 3 to 6

Texture: Highly stratified loamy fine sand, silt loam,

silty clay loam, or clay loam

An organic surface horizon may be present in some pedons.

# **Zyme Series**

Taxonomic class: Clayey, smectitic, calcareous,

mesic shallow Ustic Torriorthents Depth class: Very shallow and shallow

Drainage class: Well drained

Permeability: Slow

Geomorphic position: Hills and ridges

Parent material: Residuum derived from shale

Slope range: 5 to 35 percent Elevation: 6,500 to 7,200 feet

Mean annual air temperature: 46 to 49 degrees F

Mean annual precipitation: 10 to 13 inches

Frost-free period: 100 to 135 days

## **Typical Pedon**

Zyme channery silty clay loam, in an area of mapping unit 338, Zyme-Lockerby association, 5 to 35 percent slopes; McKinley County, New Mexico; Pinedale Quadrangle; 2,400 feet west and 225 feet north of the southeast corner of sec. 22, T. 16 N., R. 15 W.; latitude 35 degrees, 35 minutes, 47 seconds and longitude 108 degrees, 24 minutes, 20 seconds.

- A—0 to 3 inches; light olive brown (2.5Y 5/4) channery silty clay loam, olive brown (2.5Y 4/4) moist; moderate thin platy parting to moderate very fine granular structure; soft, very friable, sticky and plastic; common very fine and fine roots; 16 percent channers; very slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
- Cky1—3 to 8 inches; light olive brown (2.5Y 5/4) silty clay, olive brown (2.5Y 4/4) and (10YR 4/6) moist; massive; very hard, very firm, very sticky and very plastic; many very fine and fine roots; few very fine irregular pores; 5 percent channers and 20 to 30 percent soft shale fragments; slightly effervescent; few very fine masses of calcium carbonate and gypsum; moderately alkaline (pH 8.0); gradual wavy boundary.
- Cky2-8 to 15 inches; light olive brown (2.5Y 5/4) and (2.5Y 2/0) channery clay, olive brown (2.5Y 4/4) and (2.5Y 4/0) moist; massive; very hard, very firm, very sticky and very plastic; common very fine and fine roots; few very fine irregular pores; 30 percent sandstone channers and up to 80 percent soft shale fragments; strongly effervescent; common medium masses of calcium carbonate and gypsum; moderately alkaline (pH 8.0); clear wavy boundary.

Cr—15 inches; gray fractured gypsiferous shale.

#### **Range in Characteristics**

Particle-size control section: 35 to 45 percent clay Depth to paralithic contact: 6 to 20 inches to shale Calcium carbonate equivalent: 0 than 5 percent

Percent gypsum: 1 to 5 percent

A horizon:

Hue: 10YR or 2.5Y

Value: 4 or 5 dry and moist Chroma: 3 to 6 dry and moist

Rock fragments: 0 to 30 percent channers; all

fragments are sandstone.

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR 0 to 2

Reaction: slightly or moderately alkaline

Cky horizon: *Hue:* 2.5Y

Value: 4 or 5 dry, 3 or 4 moist Chroma: 3 or 4 dry and moist

Texture: silty clay, clay, or clay loam

Rock fragments: 0 to 10 percent sandstone gravel

Salinity: EC of 0 to 4 mmhos/cm

Sodicity: SAR 0 to 4

Reaction: moderately alkaline

Other features: 30 to 80 percent soft shale fragments

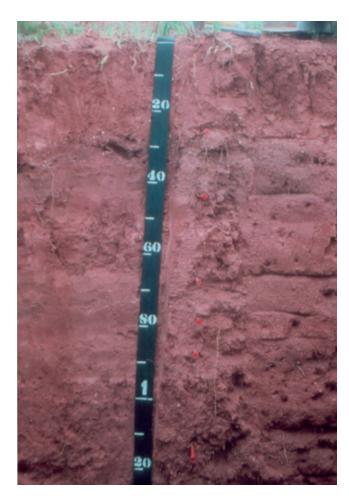


Figure 14.—Profile of Aquima silt loam in an area of Aquima-Hawaikuh silt loams, 1 to 5 percent slopes.

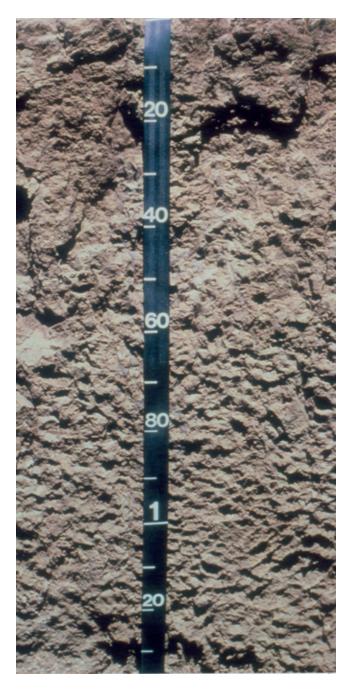


Figure 15.—Profile of Berryhill clay in an area of Berryhill-Casamero clays, 2 to 10 percent slopes.



Figure 16.—Profile of Casamero clay in an area of Berryhill-Casamero clays, 2 to 10 percent slopes.

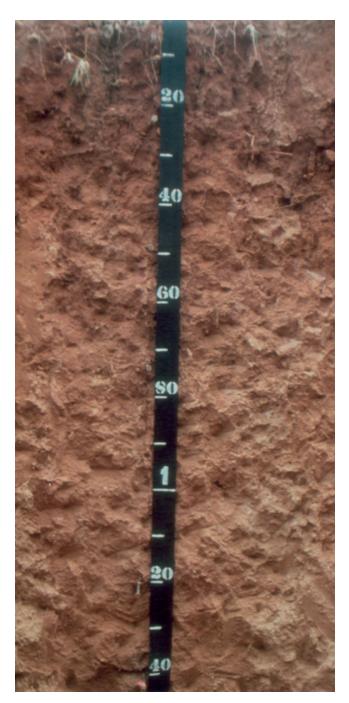


Figure 17.—Profile of Doakum fine sandy loan in an area of Doakum-Betonnie complex, 1 to 8 percent slopes.



Figure 18.—Profile of Eldado gravelly fine sandy loam in an area of Eldado gravelly fine sandy loam, 1 to 5 percent slopes.

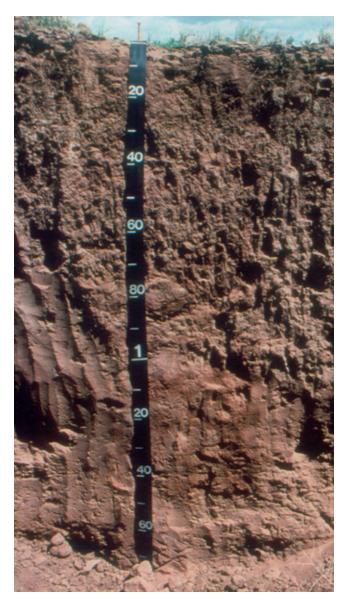


Figure 19.—Profile of Sanfeco fine sandy loam, 0 to 2 percent slopes.

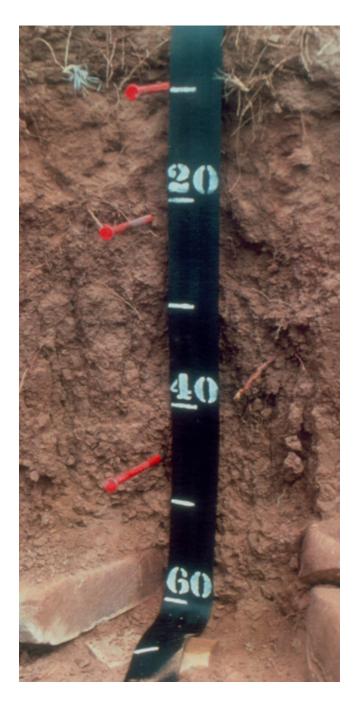


Figure 20.—Profile of Tinian very fine sandy loam in an area of Orlie-Tinian complex, 1 to 6 percent slopes.

# Formation of the Soils

Soil is a natural, three-dimensional body on the surface of the earth that supports plants. Although the soil mantle on the earth's surface varies widely in many places, all soils have some things in common. They all consist of minerals, organic matter, living organisms, water, and air that occur in varying amounts in different soils.

Soil results from the action of soil-forming processes on materials deposited or accumulated by geological processes. The characteristics of the soil at any given point are determined by five factors: (1) the physical and mineralogical composition of the parent material, (2) the climate under which the soil material accumulated and has existed since accumulation, (3) the plant and animal life on and in the soil, (4) the topography, or lay of the land, and (5) the length of time that the forces of soil formation have acted on the parent material (Jenny, 1980). These factors of soil formation are independent, and few generalizations can be made regarding any one factor unless the effects of the others are known (Gile, 1965).

# **Factors of Soil Formation**

## **Parent Material**

Parent material is the unconsolidated material in which the soil forms. It may have weathered in place from rock, or it may have been transported by water, wind, or ice. The parent material of the soils in the survey area was derived from several sources and types of bedrock. Parent material can be put into six general groups: residuum, colluvium, slope alluvium, fan alluvium, stream alluvium, and eolian sand. Soils can form from a single parent material or a combination of parent materials.

Residuum is unconsolidated, weathered, or partly weathered mineral material that accumulated by the disintegration of bedrock in place. An example of a soil with this type of parent material is the Rauster series.

Colluvium is unconsolidated earth materials deposited on and at the base of moderately steep and steep slopes by mass wasting (direct gravitational action) and local runoff. An example of a soil that has this type of parent material is the Alesna series.

Alluvium is unconsolidated material deposited by running water, including gravel, sand, silt, clay, and various mixtures of these. Slope alluvium is moved from steep slopes to more gentle slopes. An example of a soil with this type of parent material is the Toldohn series. Fan alluvium is moved along alluvial fans. Examples of soils that have this type of parent material are the Aquima and Gish series. Stream alluvium is deposited by streams. Examples of soils having this type of parent material are the San Mateo and Escawetter series. Alluvial parent material can come from more than one source.

Eolian parent material pertains to material transported and deposited by the wind. It results in dune formations. The Razito series is an example of eolian sand parent material.

## Climate

Climate is a major factor of soil formation.
Temperature, precipitation, humidity, and wind affect vegetation (biological activity), parent material, and soil drainage. These factors affect the accumulation of organic matter, leaching of salts, the type and rate of weathering of the soil mineral constituents, and the development of diagnostic soil features.

The climate in the survey area is highly varied because of the wide range in elevation and the uneven topography. Elevation ranges from 5,800 feet near the Chaco river to over 8,000 feet in the Zuni Mountains. The average annual temperature ranges from about 40 to 55 degrees F, and the average annual precipitation ranges from about 8 to 20 inches. About 50 percent of the precipitation falls during brief, generally heavy thunderstorms in the period July through September. The survey area encompasses five temperature and moisture regimes.

Some soils formed under a climate that is quite different from the present-day climate. For example, the Eldado and Sanfeco soils have properties that indicate they formed under a climate that was much moister and cooler than the present day climate.

## **Plant and Animal Life**

The effects of plants, animals, and humans are important in soil formation. Where the temperature is suitable to growth, plants begin to grow as soon as they receive appropriate amounts of water and nutrients. Plants, including fungi, influence soil formation by returning residues to the soil and aiding in decomposition. Plants influence the temperature of the soil by providing shade during warm periods and by helping to reduce evaporation from the soil surface. Vegetation also affects the transfer of minerals within the soil, the soil pH, and, in conjunction with climate and topography, the movement of material by leaching.

Bacteria, nematodes, and other forms of animal life aid in the weathering of minerals and the decomposition of organic matter. The larger animals, such as ants, earthworms, gophers, skunks, and reptiles, turn and mix the soil during burrowing activities, altering the soil.

Humans can have a strong influence on soil formation. Tillage and overgrazing may accelerate erosion. Changes in drainage conditions or topography induced by land shaping also influence the soil. Modifications in natural fertility by fertilizers, incorporation of organic residues, or cropping practices can also alter the soil-forming process.

As a rule, humans, plants, animals, insects, bacteria, and fungi affect the formation of soils by increasing the content of organic matter, producing gains or losses in plant nutrients, mixing soil layers, and changing structure and porosity.

# **Topography**

Topography and runoff influence the formation of soils by affecting drainage, erosion, soil temperature, and plant cover. The thickness and the kind of soil horizons depend on the amount of water that percolates through the parent material. Normally, more water enters a soil that is nearly level or gently sloping than one that is strongly sloping or steep. The topography of the survey area is very diverse, ranging from very steep slopes (50 percent or more) to nearly flat concave basin floors and valleys.

The amount of runoff depends on the slope. Steeper slopes have a higher amount of runoff than do gentle slopes. Coarse-textured soils take in water more rapidly than do fine-textured soils, so less water is lost through runoff on slopes that have coarse-textured soils than on those having fine-textured soils.

Aspect affects soil formation in the moderate to high elevations. Soils are slightly deeper on the northand east-facing slopes because rainfall is more

effective, temperatures are cooler, and plants are more numerous.

#### **Time**

The soils of the area range from very old to very young. The kind of horizons and the degree of soil formation depend in part on how long the soil has remained stable.

In this survey area, the youngest soils that show the least development are on flood plains and stream terraces. The parent material of these soils have been in place only a short period. Examples of these soils are the San Mateo, Notal, and Escawetter series.

Soils on alluvial fans and fan remnants show greater development. Deposition of parent material still occurs on alluvial fans. Fan remnants are relict alluvial fans that have been dissected and no longer have active deposition of parent material. Argillic horizons have developed and calcium carbonate is accumulating. The younger soils in this group include the Aquima and Zia series. The older soils in this group are generally higher in clay and of a redder color. These would include the Penistaja and Parkelei series.

The survey also has some very old soils found on rolling hills and high fan remnants. These soils exhibit very well-developed argillic horzons and thick calcic horizons. Examples of these soils are the Teczuni and Bryway series.

# Landforms of the Survey Area

The survey area is part of the Colorado Plateau physiographic province, generally characterized by rough, broken terrain, including small, steep mountainous areas, plateaus, cuestas, and mesas intermingled with steep canyon walls, escarpments, and valleys (figs. 21, 22, 23, 24).

The following are landforms recognized in the survey area and some of the soils associated with them. Landforms are not static; they are continually being created and eroded.

## **Alluvial Fans**

An alluvial fan is formed by Holocene-age and present-day alluvium originating from mountains, hills, and other upslope landscapes. Sediment loads are deposited when slope gradients change from upland positions to less sloping landforms. An inherent feature of fan development is the continuously changing pattern of channels and loci of deposition (Cooke, 1973). Over a long period of time, these changes ensure the maintenance of fans formed by distributing

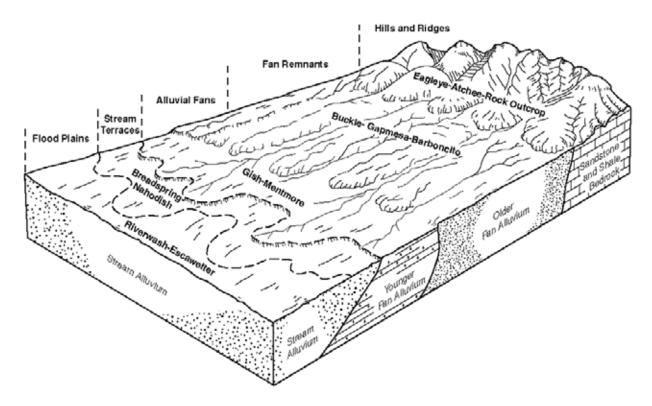


Figure 21.—Generalized relationships of some soils in the survey area.

material widely over the surface. The soils on this landscape position are generally very deep, and their soil textures are highly variable, depending on the local geology from which they formed. Soil series found on alluvial fan positions are the Gish and Zia series.

# **Drainageways**

A drainageway is a course or channel along which water moves as it drains an area formed by Holoceneage and present-day alluvium that originated from upslope positions in a watershed. Periodically, drainageways can move concentrated water and might or might not exhibit a defined low-order channel. These relatively narrow areas that have slopes greater than 2 percent drain into larger valley systems. The soils on this landscape position generally are very deep, with soil textures that are highly variable, depending on the local geology. Soil series found in drainageways are the Concho and Parkelei series.

#### **Dunes**

This landform has developed from Holocene-age and present-day eolian sands. These relatively small transverse dunes formed perpendicular to the prevailing winds. Most dunes in this area are stable

because established vegetation restricts their activity. Dunes can be found as a component on most of the other landforms portrayed in this section. These soils can be very deep and located in large dune fields or as a shallow mantle over bedrock-controlled surfaces. The Razito series is found on dunes.

## **Escarpments**

Escarpments are a familiar feature in the survey area. They are relatively steep slopes or cliffs produced by erosion and faulting. Because of the steep slopes, the soils formed on this landform are generally shallow. Examples of soil series on escarpments are the Skyvillage and Vessilla series.

## **Fan Remnants**

This landform developed from the Pleistocene to early Holocene eras. On this position, soils exhibit different degrees of pedogenic (soil) development. The degree of development depends upon the amounts of translocated calcium carbonate and/or silicified clays, which are related to the age of the soil.

Fan remnants have been dissected or downcut to the point at which flooding rarely occurs. This landform has two important components. One is the summit,

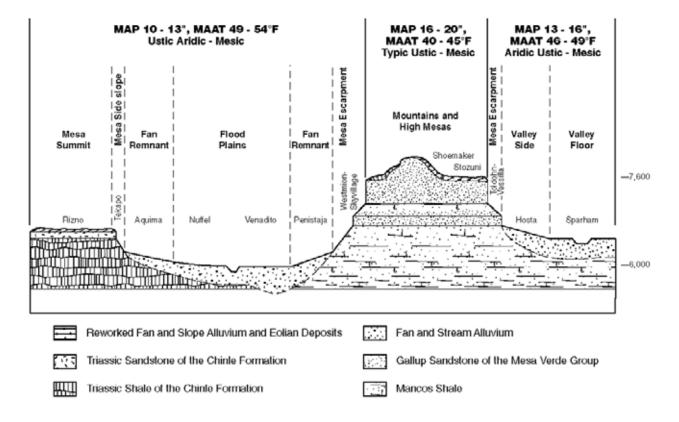


Figure 22.—Idealized cross-section illustrating soil-geomorphic-geologic relationships of soils on the Zuni Indian Reservation.

where erosional activity is relatively low. This area will show the different degrees of soil development and age. Second is the sideslope, where erosional activity is cutting uphill into the more stable summit. In most areas in the survey, the surface has a thick eolian mantle that is being eroded.

Soils on fan remnants vary greatly in their makeup. The Mentmore series can be found on the younger fan remnants. The Gapmesa and Barboncito series are soils that can be found on summits of older fan remnants.

#### Flood Plains

This landform is formed by early Holocene-age to present-day stream alluvium. In this survey area, floodwaters flow at low to very low gradients along valley floors and tend to be elongated in nature. The soils on these flood plains receive periodic depositions of fresh alluvium, causing an irregular decrease in organic carbon and weak to no soil development. Soils on this landform are predominantly very deep with soil textures that are highly variable, depending on the local

geology from which they formed. The Escawetter and San Mateo soils are formed in flood plains.

#### **Hills and Mountains**

The mountain slopes have no particular age connotation and, therefore, are not considered a geomorphic surface (Balster and Parsons, 1968). Soil development on these landforms is highly dependent on the characteristics of the bedrock, such as its chemical composition, grain size, and hardness. The most influential soil-forming factors in determining how soil developed on hills and mountains are time and the slope gradient of the bedrock.

Soils on this landform vary greatly in horizon development, from soils with no development to soils that have well-developed argillic horizons. Soils that have little or no horizon development are usually found on the steeper slopes where erosional activity is greatest. Soils that have well-developed horizons are generally on gently sloping to moderately steep slopes, where erosion is slight to moderate. The Fortwingate series formed in shale and sandstone on somewhat

more stable surfaces that allow argillic horizons to form. The Westmion series is usually on the steeper slopes and more active erosional surfaces. The constant erosion of the soil does not allow time for an argillic horizon to develop, as clays do not have time to translocate and accumulate.

# Hogbacks

Hogbacks are highly tilted (greater than 45 percent) rock layers that form a sharp, crested ridge. A good example is on the east end of Gallup where Interstate 40 bisects it. Because of the steep slopes and resistant rocks, the soils are generally shallow. The Vessilla and Toldohn soils are found on this landform.

#### Lava Plateaus

Mesa Chivato in southeastern McKinley County is an example of a Lava Plateau. It is a broad, elevated tableland underlain by a thick succession of basaltic lava flows. The survey area contains about 60 square miles of a total of approximately 400 square miles of Mesa Chivato. Some soils series found on this landform are the Amcec and the Montillo series.

#### **Mesas and Cuestas**

These landforms have two important components. The first is the mesa summit and the cuesta dipslope. They are both nearly level to gently sloping, bedrock-controlled surfaces that are generally stable. The Arabrab and Evpark series are found on these surfaces. The soils are characterized by well-developed argillic horizons.

The second component is the escarpment, where erosional activity is cutting back into the more stable summit. Soils on this component have little or no horizon development because of their steep slopes, where erosional activity is greatest. Typical soils representing this escarpment component are the Toldohn and Vessilla series.

Mesas differ from cuestas in that an escarpment on all sides terminates the mesa summit, whereas a cuesta generally has one or more sides that grade into the surrounding terrain, following gentle slopes.

#### **Plateaus**

These landforms are comparatively flat areas of great extent and elevation that are commonly bordered

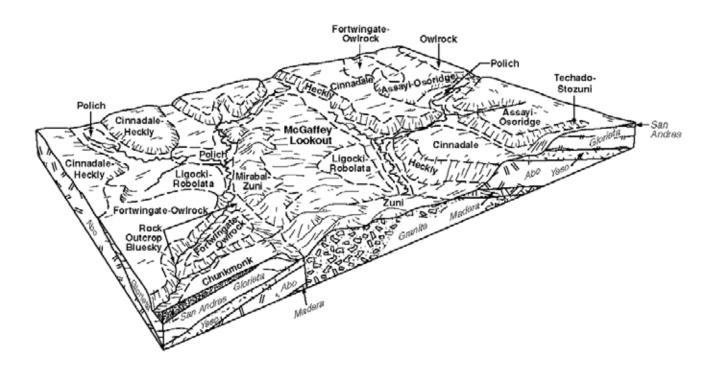


Figure 23.—Generalized cross-section of soils in the northern part of the Zuni Mountains, near McGaffey.

on at least one side by an escarpment or abrupt descent. The landscape of a plateau summit can be complex, comprised of many subsidiary geomorphic features. Because of this, soils formed on plateaus are highly variable. In the survey area, Mesa Chivato and the highlands south of Gallup qualify as plateaus. The Parkelei and Fraguni are common soils found on the plateau south of Gallup.

# Ridges

Ridges are long, narrow elevations of the land surface, usually sharp-crested with steep sides, that form extended uplands between valleys. Soils found on the summits, if wide enough, are mostly shallow, whereas soils on the sides are generally shallow but sometimes deeper. The Plumasano series can be found on the sideslopes of ridges, while the Atchee soils are on the summits.

#### **Stream Terraces**

This position is the erosional remnant of the active flood plains that existed during the late Pleistocene to Holocene ages. The slopes are in the same general direction as the current flood plain. The soils in this position are underlain by stratified sand, gravel, loamy, silty, or clayey sediments and, in some cases, buried paleosols.

The soils on stream terraces have been stable for a sufficient time period to form cambic horizons. Formation of soil structure and accumulations of calcium carbonate and sometimes gypsum characterize a cambic horizon. This position is still subject to some flooding during major events. These rare flooding occurrences and the thin alluvial deposits from the floodwaters do not inhibit soil development. Typical soils that represent stream terraces are the Breadsprings and Nahodish series.

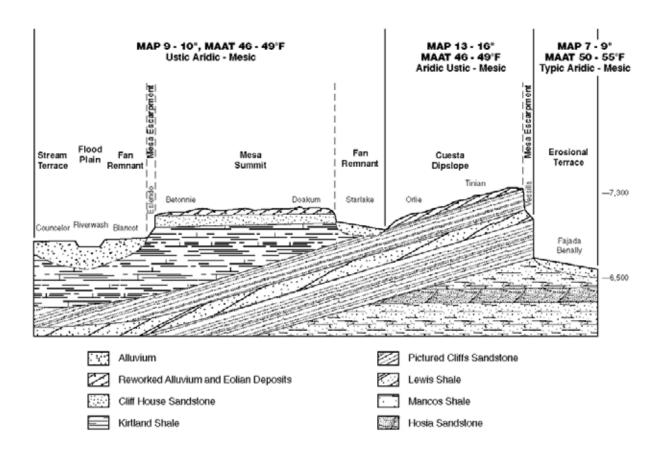


Figure 24.—Idealized cross-section illustrating soil-geomorphic-geologic relationships of soils on the Chaco slope of the San Juan Basin.

# Valley floors

A general term for the nearly level to gently sloping, lowest surface of a valley system. Landforms include stream channels, stream terraces, and flood plains. In the survey area, this landscape position along with the valley side positions, is generally the most productive and manipulated by humans. The Concho and Redpen series have formed on these positions.

# Valley sides

These are sloping surfaces between the valley floor and the summits of adjacent uplands. Fan remnants

and alluvial fans are landforms found on this broad landscape position. Soil series found on these surfaces are the Mentmore and the Zia soils.

## **Volcanic Cones**

A volcanic cone is a conical hill of lava or cinders that is built up around a volcanic vent. Volcanic cones are observable on Mesa Chivato. These soils range from very deep to shallow and are generally clayey textured if weathered from basalt. Soils that have formed on this landscape feature are the Alesna and Montillo series.

## References

American Association of State Highway and Transportation Officials (AASHTO). 1998. Standard specifications for transportation materials and methods of sampling and testing. 19th edition, 2 vols.

American Society for Testing and Materials (ASTM). 1998. Standard classification of soils for engineering purposes. ASTM Standard D 2487.

Balster, C.A., and R.B. Parsons. 1968. Geomorphology and soils, Willamette Valley, Oregon. Oregon Ag. Exper. Sta. Special Report 265.

Cooke, Ronald U., and Andrew Warren. 1973. Geomorphology in deserts. Part 1:The desert context. Univ. of Calif. Pr.

Fenneman, N.M., 1931, Physiography of Western United States, McGraw-Hill, 534 p.

Gile, Leland H., Frederick F. Peterson, and Robert B. Grossman. 1965. Morphological and genetic sequences of carbonate accumulations. Soil Science 101, pp. 347-360. Jenny, Hans. 1941. Factors of soil formation.

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. (Available in the State Office of the Natural Resources Conservation Service at 6200 Jefferson N.E., Albuquerque, New Mexico.)

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. (Available in the State Office of the Natural Resources Conservation Service at 6200 Jefferson N.E., Albuquerque, New Mexico.)

United States Department of Agriculture, Soil Conservation Service. 1967. Soil survey of the Zuni Mountain Area, New Mexico.

United States Department of Agriculture, Natural Resources Conservation Service. 1998. Keys to soil taxonomy. 8th ed. Soil Survey Staff.

United States Department of Agriculture, Natural Resources Conservation Service. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Soil Survey Staff. U.S. Dept. Agric. Handb. 436.

United States Department of Agriculture, Soil Conservation Service. 1993. Soil survey manual. Soil Survey Staff, U.S. Dept. of Agric. Handb. 18.

## **Glossary**

- **Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
- **Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
- **Alkali (sodic) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.
- **Alluvial fan.** The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.
- **Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.
- Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.
- **Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.
- **Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.
- **Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.
- **Arroyo.** The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.
- Aspect. The direction in which a slope faces.
- **Association**, **soil**. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.
- Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the

amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

- **Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.
- Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.
- **Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- **Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- **Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.
- **Bottom land.** The normal flood plain of a stream, subject to flooding.
- **Breaks.** The steep and very steep broken land at the border of an upland summit that is dissected by ravines.
- **Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management

increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

- **Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.
- Canopy. The leafy crown of trees or shrubs. (See Crown.)
- **Canyon.** A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.
- Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.
- **Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.
- Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.
- Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.
- **Chemical treatment.** Control of unwanted vegetation through the use of chemicals.
- Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- **Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.
- Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.
- Coarse textured soil. Sand or loamy sand.
- **Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- **Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.
- **Complex slope.** Irregular or variable slope. Planning or

- establishing terraces, diversions, and other watercontrol structures on a complex slope is difficult.
- Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.
- Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.
- **Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.
- Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."
- Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.
- **Corrosion.** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.
- **Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of

- regular crop production, or a crop grown between trees and vines in orchards and vineyards.
- **Cropping system.** Growing crops according to a planned system of rotation and management practices.
- **Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.
- **Cuesta.** A hill or ridge that has a gentle slope on one side and a steep slope on the other; specifically, an asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.
- **Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.
- **Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.
- **Dip slope.** A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.
- Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."
- **Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.
- Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.
- **Eolian soil material.** Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.
- Ephemeral stream. A stream, or reach of a stream,

- that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.
- Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

  Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
  - Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.
- **Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.
- **Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
- Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called normal field capacity, normal moisture capacity, or capillary capacity.
- Fine textured soil. Sandy clay, silty clay, or clay.
  Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.
- **Footslope.** The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).
- Forb. Any herbaceous plant not a grass or a sedge.
  Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.
- **Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Gilgai. Commonly, a succession of microbasins and

microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

- **Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.
- **Ground water.** Water filling all the unblocked pores of the material below the water table.
- **Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- **Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.
- Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.
- Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows: O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C. Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

- Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.
- **Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.
- **Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.
- **Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.
- **Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.
- **Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.
- Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.
- Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time.

  Therefore, intake rate for design purposes is not a constant but is a variable depending on the net

irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 very	low
0.2 to 0.4	. low
0.4 to 0.75 moderately	low
0.75 to 1.25 mode	rate
1.25 to 1.75 moderately	high
1.75 to 2.5	high
More than 2.5very	high

- Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.
- Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are: Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

*Drip (or trickle).*—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system. Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

- $\mathbf{K}_{\mathsf{sat}}$ . Saturated hydraulic conductivity. (See Permeability.)
- **Lacustrine deposit.** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.
- **Leaching.** The removal of soluble material from soil or other material by percolating water.
- **Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.
- **Loam.** Soil material that is 7 to 27 percent clay

- particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.
- **Low strength.** The soil is not strong enough to support loads.
- Major Land Resource Area. These are geographically associated land resource units. Identification of these large areas is important in statewide agricultural planning and has value in interstate, regional, and national planning.
- Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.
- **Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.
- **Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.
- **Mesa.** A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.
- **Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- **Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.
- **Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.
- **Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.
- **Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- **Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.
- Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—few, common, and many; size—fine, medium, and coarse; and contrast—faint, distinct, and prominent. The size

- measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.
- **Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.
- **Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
- Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	. less than	0.5	percent
Low	0.5 to	1.0	percent
Moderately low	1.0 to	2.0	percent
Moderate	2.0 to	4.0	percent
High	4.0 to	8.0	percent
Very high	more than	8.0	percent

- **Paleosols.** A soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists at the site.
- **Parent material.** The unconsolidated organic and mineral material in which soil forms.
- **Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.
- **Pedon.** The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.
- **Permeability.** The quality of the soil that enables water or air to move downward through the profile.

The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

- **Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.
- **pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)
- Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.
- **Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.
- Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.
- Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.
- **Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.
- **Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.
- **Porcelanite.** Fused shales and clay that occur in roof and floor of burned coal seams.
- **Potential native plant community.** See Climax plant community.
- Potential rooting depth (effective rooting depth).

  Depth to which roots could penetrate if the content

- of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.
- **Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.
- **Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.
- **Profile**, **soil**. A vertical section of the soil extending through all its horizons and into the parent material.
- Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.
- Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.
- Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

## Redoximorphic concentrations. Nodules,

concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

- Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha, alphadipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.
- **Relief.** The elevations or inequalities of a land surface, considered collectively.
- **Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.
- **Rill.** A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.
- **Risers.** The vertical element of a steplike natural landform.
- **Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.
- **Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.
- **Root zone.** The part of the soil that can be penetrated by plant roots.
- Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called groundwater runoff or seepage flow from ground water.
- **Saline soil.** A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.
- Salinity. The degree to which a soil is affected by soluble salts. Salinity is expressed as a electrical conductivity (EC) of a saturation extract. The solution resistance is measured in mmhos/cm. The degrees of salinity and their respective ratios are:

Non-saline	0-2
Very slightly saline	2-4
Slightly saline	4-8
Moderately saline	8-16
Strongly saline	>16

- **Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.
- **Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

- **Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
- Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.
- **Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)
- **Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
- **Shale.** Sedimentary rock formed by the hardening of a clay deposit.
- **Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
- Shrink-Swell. Soil volume changes due to increases or decreases in moisture content. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at <sup>1</sup>/<sub>3</sub>- or <sup>1</sup>/<sub>10</sub>-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility. The shrink-swell classes are defined as follows:

Class	LEP
Low	<3
Moderate	3-6
High	6-9
Very High	>9

- Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- **Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or

- management requirements for the major land uses in the survey area.
- Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.
- Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.
- Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.
- **Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.
- Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.
- **Sodicity.** The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na<sup>+</sup> to Ca<sup>++</sup> + Mg<sup>++</sup>. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

- **Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.
- **Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.
- **Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and

sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

- **Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.
- Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.
- **Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.
- Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).
- **Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.
- **Substratum.** The part of the soil below the solum. **Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.
- Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."
- **Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.
- **Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to

- that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.
- **Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."
- **Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- **Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
- **Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
- **Tread.** The flat part of a step-like natural land form. **Upland.** Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
- Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.
- **Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.
- Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.
- Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.
- **Windthrow.** The uprooting and tipping over of trees by the wind.

## **Tables**

Table 1.--Temperature and Precipitation (Recorded in the period 1971-2000 at McGaffey 5 SE, NM560)

Temperature Precipitation 2 years in 2 years in 10 10 will havewill have-- Average Average Month |number of|Average| |number of |Average | Average | Average | Less | More | days with | snowfall daily | daily Maximum Minimum growing |maximum|minimum| temperature temperature than--|than--|0.10 inch| degree higher lower days\* or more than-than-- $\circ_{\underline{F}}$  $\circ_{\underline{F}}$  $\circ_{\underline{F}}$  $\circ_{\underline{F}}$  $\circ_{\underline{F}}$ <u>Units</u> <u>In</u> <u>In</u> <u>In</u> <u>In</u> January----39.4 8.3 23.8 57 -18 1.90 0.56 2.98 4 9.5 12.1 27.3 February---42.4 59 -12 0 1.61 0.63| 2.54 4 9.4 48.0 18.3 33.1 65 -5 0 2.04 0.761 3.22 9.1 March----55.7 23.8 39.8 73 5 1.88 3.8 April-----1.19 0.44 3 31.3 48.4 15 48 1.04 0.37 1.87 May----65.6 80 0.4 June-76.8 39.0 57.9 238 0.68 0.21 1.42 0.0 July----80.0 46.0 63.0 91 35 389 2.31 1.12 3.33 6 0.0 77.1 45.5 2.74 1.45 3.88 0.0 August----61.3 88 35 342 72.0 55.2 166 September--38.4 83 22 1.78 0.94 2.53 4 0.1 62.2 27.5 44.9 78 8 22 1.65 0.81 2.70 3 2.6 October----48.8 16.5 32.6 68 1.92 0.94 2.89 6.7 November-December---41.0 9.7 25.4 59 -16 0 1.48 0.35 2.46 8.0 Yearly: Average---59.1 26.4 42.7 Extreme--94 -32 91 -21 Total----1,210 20.33 16.28 | 23.88 | 48 49.6

Table 1.--Temperature and Precipitation--Continued Recorded in the period 1971-2000 at Thoreau 5 ENE, NM830  $\,$ 

	Temperature					   Precipitation					
Month	daily	Average   daily   minimum	į	Maximum		Average  number of   growing   degree   days*	İ	will       Less	More	Average number of days with 0.10 inch or more	snowfall
	   ° <u>F</u>	   ° <u>F</u>	   ° <u>F</u>	   ° <u>F</u>	   ° <u>F</u>	   <u>Units</u>	   <u>In</u>	   <u>In</u>	   <u>In</u>		   <u>In</u>
January	43.1	18.7	   30.9	   61	   –5	   0	0.74	0.22	1.15	2	9.6
February	48.3	22.4	   35.3	   67	   1	   0	0.59	   0.20	0.91	   2	   5.1
March	55.1	26.9	41.0	   73	10	10	0.67	   0.26	1.08	   2 	4.0
April	64.3	32.6	48.4	   80	   15	   62 	0.41	0.11	0.72	   1 	0.8
May	72.6	40.6	   56.6	   87	   26	   222 	0.69	0.17	1.10	   2 	0.5
June	83.7	50.1	   66.9 	   95 	34	   514	0.54	0.17	0.93	   1 	0.0
July	85.6	55.5 	   70.6	   96 	   46	   641 	1.54	   0.88 	2.13	I   5 I	0.0
August	82.5	53.7	   68.1 	   93 	44	   563 	2.07	1   1.37	   2.70	I   5 	0.0
September	76.8	47.4	62.1	   89 	32	   365 	1.41	0.54	2.14	   3 	0.0
October	66.3	37.2	   51.8 	   82 	   19 	   121 	1.01	   0.38 	   1.54 	   2 	   1.3
November	52.8	25.9	39.4	   71 	4	   6 	0.74	   0.26 	1.14	2	3.7
December	44.9	20.0	32.5	   64 	  -4	0	0.64	0.17	1.01	2	7.4
Yearly:			 	 		 		 	 	   	 
Average	64.7	35.9	   50.3	 	 	 		 	 	 	 
Extreme	   99	   -20	 	   97	   –9	 		 	 	 	 
Total	   	   	   	   	   	   2,506 	   11.05 	   8.87 	   12.79 	   29 	   32.4 
	l	l	I	l	l	l	l	l	I	l	l

Table 1.--Temperature and Precipitation--Continued  $\label{eq:Recorded} \text{Recorded in the period 1971-2000 at Zuni, $NM897$}$ 

	   Temperature 					   Precipitation					
Month	daily	  Average   daily  minimum   	į	Maximum		Average   number of   growing   degree   days*	İ	Less	nave     More	Average number of days with 0.10 inch or more	snowfall
	   ° <u>F</u>	   ° <u>F</u>	   ° <u>F</u>	   ° <u>F</u>	   ° <u>F</u>	   <u>Units</u>	   <u>In</u>	<u>In</u>	   In	   	   <u>In</u>
January	47.1	16.5	31.8	   65	-10	0	0.91	0.21	1.52	3	2.9
February	52.1	20.6	36.3	   69	   0	0	0.75	0.21	1.19	2	1.4
March	58.1	25.1	41.6	   76	   5	   6	   0.99	0.35	1.73	3	0.6
April	   66.3	29.7	48.0	   82	   12	   49	0.62	0.12	1.12	1	0.2
May	   75.1	37.1	56.1	   89	   21	   194	0.58	0.17	1.07	1	0.0
June	   85.5	45.3	65.4	   97	31	   451	0.43	0.19	0.99	1	0.0
July	   88.7	53.2	71.0	   100	   41	   635	   1.95	0.67	3.00	   4	0.0
August	   85.5	53.2	69.4	   96	   42	   585	2.40	1.16	3.47	   5	0.0
September	   80.0	45.6	   62.8   	   91	   30	   367 	   1.29	0.35	2.04	   3 	0.0
October	   69.6	34.3	   51.9	   86	   16	   117	   1.26	0.45	2.10	   3 	0.2
November	   56.3	23.8	40.0	   74	   4	   4	   0.89	0.37	1.46	2	0.9
December	   48.4 	   17.5 	   32.9 	   65 	   -6 	   1 	   0.82 	0.23	1.40	   2 	   2.8 
Yearly:	 		 			 	 			 	 
Average	   67.7	33.5	50.6				 		 	 	 
Extreme	105	-26		100	   -11		 		 		
Total	   	   	 	   	   	   2,410 	   12.88 	9.03	   15.44 	   30 	   9.0 

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at McGaffey 5 SE, NM5560)

	   Temperature					
Probability	24 °F	28 °F	32 °F			
	or lower	or lower	or lower			
		j I	 			
Last freezing	İ	İ	İ			
temperature						
in spring:						
1 year in 10	 	 				
later than	June 4	June 21	June 29			
2 years in 10		 	 			
later than	May 29	June 15	June 24			
5 years in 10						
later than	   May 18	June 3	June 15			
	į	į	į			
First freezing		 	 			
temperature		İ	İ			
in fall:	į	į	į			
1 year in 10	 	l I	 			
earlier than	September 20	September 15	September 8			
0						
2 years in 10 earlier than	  Sentember 25	  Sentember 18	  Sentember 12			
3011101 01011						
5 years in 10						
earlier than	October 5	September 26	September 19			
	L	L	L			

Table 2.--Freeze Dates in Spring and Fall--Continued (Recorded in the period 1971-2000 at Thoreau 5 ENE, NM8830)

Probability	24 <sup>O</sup> F	28 <sup>O</sup> F   or lower	32 <sup>O</sup> F   or lower	
	<del></del>   	   	   	
Last freezing				
temperature in spring:	 	 	 	
in spring.	 	 	 	
1 year in 10	İ	İ	İ	
later than	April 30	May 20	May 30	
2 years in 10	 	 	 	
later than	April 24	May 13	May 24	
		ĺ		
5 years in 10				
later than	April 13	April 30	May 14 	
First freezing	ĺ	İ		
temperature				
in fall:	 	 	 	
1 year in 10	 	 	 	
earlier than	October 14	October 3	September 19	
2 years in 10 earlier than	   October 19	   October 9	   September 26	
earrier chall	CCCODEL 19	occoper a	Debremer 20	
5 years in 10	İ	İ	İ	
earlier than	October 28	October 20	October 9	

Table 2.--Freeze Dates in Spring and Fall--Continued

Recorded in the period 1971-2000 at Zuni, 9897)

	   Temperature						
Probability	24 <sup>O</sup> F	28 <sup>O</sup> F	32 °F or lower				
Last freezing temperature		   	   				
in spring:		   	   				
1 year in 10 later than	     May 15	     June 2	     June 8				
2 years in 10							
later than	May 8	   May 27 	June 2				
5 years in 10 later than	April 25	     May 16	   May 24				
racer crair		120, 10					
First freezing temperature		   	   				
in fall:		   	   				
1 year in 10 earlier than	October 6	October 4	     September 19				
2 years in 10 earlier than	October 11	     October 8 	     September 24 				
5 years in 10 earlier than	October 20	   October 16 	     October 5 				

Table 3.--Growing Season

(Recorded in the period 1971-2000 at McGaffey 5 SE, NM5560)

	Daily minimum temperature during growing season					
Probability	Higher than 24 <sup>O</sup> F	Higher than 28 OF	Higher than 32 OF			
	Days	Days	Days			
9 years in 10	113	   92	   76			
8 years in 10	122	100	   83			
5 years in 10	139	   115	   96			
2 years in 10	155	130	   109			
1 year in 10	164	   138 	   115 			

(Recorded in the period 1971-2000 at Thoreau 5 ENE, NM8830)

	Daily minimum temperature during growing season					
Probability	Higher than 24 <sup>O</sup> F	Higher than 28 <sup>O</sup> F	Higher   than   32 <sup>O</sup> F 			
	Days	Days	Days			
9 years in 10	174	   148	   123			
8 years in 10	183	   156	   131			
5 years in 10	198	   172	   148			
2 years in 10	214	   188	   165			
1 year in 10	222	   197 	   173 			

Table 3.--Growing Season--Continued

(Recorded in the period 1971-2000 at Zuni, NM9897)

	Daily minimum temperature during growing season					
Probability       	Higher than 24 <sup>O</sup> F	Higher   than   28 <sup>O</sup> F	Higher than 32 <sup>O</sup> F			
	Days	   <u>Days</u>	   <u>Days</u>			
9 years in 10	152	134	109			
8 years in 10	161	   141 	   118			
5 years in 10	177	   154	134			
2 years in 10	194	   167	   150			
1 year in 10	202	   173 	   158 			

Table 4.--Acreage and Proportionate Extent of the Soils

Map	Soil name	Cibola	   McKinley	San Juan	Tot	al
symbol		County	County	County	Area	Extent
		Acres	Acres	Acres	Acres	Pct
8		52	1,474		1,526	*
10	Tsosie-Councelor-Blancot fine sandy loams, 1   to 3 percent slopes		   18,890	 	18,890	0.7
11	Doakum-Betonnie complex, 1 to 8 percent   slopes		   40,109		40,109	1.4
12	Calladito-Elias association, 1 to 6 percent   slopes		18,569		18,569	0.7
13	Councelor-Calladito complex, 1 to 8 percent     slopes		7,954		7,954	0.3
14	Councelor-Eslendo-Calladito complex, 2 to 25		7,554			İ
	percent slopes		7,064		7,064	0.2
16	Starlake clay, 1 to 3 percent slopes		12,367		12,367	0.4
22	Querencia-Lavodnas association, 2 to 15					
	percent slopes		26,047		26,047	0.9
30	Orlie-Tinian complex, 1 to 6 percent slopes		28,445		28,445	1.0
40	Nuffel silt loam, 0 to 2 percent slopes		633		633	*
42	Suwanee clay loam, 0 to 2 percent slopes		2,435		2,435	*
44	Suwanee clay, 0 to 1 percent slopes		540		540	*
45	Nutreeah clay loam, 0 to 2 percent slopes		998		998	*
47	Conchovar clay loam, 0 to 1 percent slopes		195		195	*
49 51	Concho clay loam, 0 to 2 percent slopes   Kwakina loamy fine sand, 0 to 2 percent		871 	 	871	* 
52	slopes   Zuniven loamy fine sand, 0 to 2 percent	291	2,057 		2,348	* 
	slopes		549		549	*
53	Hawaikuh clay loam, 0 to 2 percent slopes	314	2,067		2,381	*
54	Venadito clay, saline, 0 to 2 percent slopes-	243			243	*
55	Sparham clay loam, 0 to 2 percent slopes		512		512	*
60 100	Redpen sandy clay loam, 0 to 2 percent slopes  Norkiki-Kimnoli complex, 1 to 8 percent	61	2,164 	 	2,225	* 
110	slopes   Benally-Fruitland association, 1 to 5 percent		116,746 	4,197 	120,943	4.3
111	slopes   Yelives fine sandy loam, 1 to 3 percent		20,089 	5,295 	25,384	0.9
115	slopes   Razito-Shiprock complex, 3 to 8 percent		132 	3,725 	3,857	0.1
116	slopes   Fajada-Huerfano-Benally complex, 1 to 5		77,896 	1,434	79,330	2.8
118	percent slopes   Farb-Chipeta-Rock outcrop complex, 2 to 30		97 <b>,4</b> 52	16,766 	114,218	4.0
	percent slopes		54,918	6,794	61,712	2.2
120	Doak-Shiprock complex, 1 to 8 percent slopes-		91,417	387	91,804	3.2
121	Badland		4,378	535	4,913	0.2
122	Rock outcrop-Farb complex, 2 to 8 percent   slopes		2,751	   90	2,841	0.1
125	Sanfeco fine sandy loam, 0 to 2 percent     slopes		6,598	98	6,696	0.2
130	Chipeta-Badland-Moncisco complex, 2 to 45   percent slopes		0,350   	11,749	11,749	0.2
150	Riverwash-Escawetter association, 0 to 1   percent slopes		     1,857	++//+/	1,857	*
160	Escawetter-Riverwash-Razito association, 0 to		±,00/	1 064		"     *
205	5 percent slopes    Penistaja-Tintero complex, 1 to 10 percent			1,064	1,064	
	slopes	3,396	126,944		130,340	4.6

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map	Soil name	Cibola	   McKinley	     San Juan	Tota	al
symbol	:	County	County	County	Area	Extent
		Acres	Acres	Acres	Acres	Pct
208	Marianolake fine sandy loam, 1 to 8 percent			  -	 	
200	slopes		5,565		, 5,565	0.2
210	Marianolake-Skyvillage complex, 1 to 8   percent slopes		70.001		70.001	
212	Rehobeth silty clay loam, 0 to 1 percent		72,901	 	72,901 	2.6 
	slopes		5,671		5,671	0.2
215	Viuda-Penistaja-Rock outcrop complex, 1 to 5   percent slopes		   6,983	 	   6,983	0.2
220	Hagerwest-Bond fine sandy loams, 1 to 8		0,565		0,565	0.2
	percent slopes		67,706		67,706	2.4
225	Aquima-Hawaikuh silt loams, 1 to 5 percent   slopes	4,306	24,136	 	   28,442	1.0
230	Sparank-San Mateo-Zia complex, 0 to 3 percent	4/300	21,130		20,442	
	slopes	439	90,299		90,738	3.2
235 240	Notal-Hamburn complex, 0 to 2 percent slopes-  Breadsprings and Nahodish soils, 0 to 2		96,387	6,131	102,518	3.6
240	percent slopes		41,845		   41,845	1.5
241	Mentmore loam, 1 to 8 percent slopes		44,725	i	44,725	1.6
242	Gish-Mentmore complex, 1 to 8 percent slopes-		14,309	j	14,309	0.5
244	Buckle fine sandy loam, 1 to 8 percent slopes		17,938		17,938	0.6
245	Buckle-Gapmesa-Barboncito complex, 1 to 6		[	<u> </u>		[
250	percent slopes   Hospah-Skyvillage-Rock outcrop complex, 2 to		37,477	 	37,477	1.3
230	35 percent slopes		94,605		   94,605	3.3
255	Farview-Rock outcrop complex, 2 to 15 percent			İ		
	slopes		2,406		2,406	*
258	Eagleye-Atchee-Rock outcrop complex, 2 to 35   percent slopes		   04 414		04 414	
260	Quarries and pits		84,414 1,298		84,414 1,298	3.0
261	Coal mine lands		13,243	 	13,243	0.5
265	Uranium mined lands		3,934	1	3,934	0.1
270	Alesna-Rock outcrop complex, 15 to 55 percent		3,334	I I	3,554	0.1
270	slopes		22,717		22,717	0.8
275	Eldado gravelly fine sandy loam, 1 to 5		İ	j	İ	į
	percent slopes		2,137		2,137	*
280	Azabache extremely gravelly clay loam, 2 to 8   percent slopes		2,236	 	   2,236	*
290	Rock outcrop-Westmion-Skyvillage complex, 30		2,230	 	2,230 	
	to 80 percent slopes		79,242		79,242	2.8
291	Rock outcrop-Eagleye-Atchee complex, 35 to 70		[	<u> </u>		[
300	percent slopes   Regracic gravelly sandy clay loam, 2 to 6		35,334	 	35,334	1.2
300	percent slopes		3,631	 	   3,631	0.1
305	Celavar-Atarque complex, 1 to 8 percent		į	j		į
	slopes	536	45,307		45,843	1.6
308	Fikel-Venzuni complex, 1 to 6 percent slopes-		14,508		14,508	0.5
310	Parkelei sandy loam, 1 to 8 percent slopes		24,830		24,830	0.9
312	Bluewater loam, 0 to 1 percent slopes		1,061			*
315	Flugle-Fragua complex, 1 to 10 percent slopes	10,292	66,861		77,153	2.7
316	Royosa loamy fine sand, 1 to 15 percent slopes	106	1 22 042	 	22.040	0.8
317	Highdye-Evpark-Bryway complex, 2 to 20	100	22,943	 	23,049 	U.0
	percent slopes	647	12,725		13,372	0.5
320	Parkelei-Fraguni complex, 1 to 8 percent			ļ		ļ
	slopes		,		, 0,205	2.5
325	Venzuni silty clay, 1 to 3 percent slopes		1,729		1,729	*
332	Evpark-Arabrab complex, 2 to 6 percent slopes		55,963	 	55,963 	2.0
			I	I	I	I

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map	   Soil name	Cibola	   McKinley	   San Juan	Tota	al
symbol		County	County	County	Area 	Extent
		Acres	Acres	Acres	Acres	Pct
335 336	Venadito clay, 1 to 3 percent slopes   Nuffel-Venadito complex, 1 to 3 percent		4,668	   	4,668	0.2
338	slopes    Zyme-Lockerby association, 5 to 35 percent	4,308	5,888	 	10,196	0.4
345	slopes    Rock outcrop-Tuces complex, 20 to 70 percent		13,892	 	13,892	0.5
350	slopes   Toldohn-Vessilla-Rock outcrop complex, 8 to		28,437	 	28,437	1.0
351	35 percent slopes   Rock outcrop-Vessilla complex, 35 to 70	4,588	151,620 	 	156,208	5.5
	percent slopes	885	37,707		38,592	1.4
352	Zia sandy loam, 1 to 5 percent slopes	1,239	33,885		35,124	1.2
353	Mido loamy fine sand, 1 to 6 percent slopes	493	11,644		12,137	0.4
354 355	Knifehill loam, 1 to 5 percent slopes   Rizno-Tekapo-Rock outcrop complex, 2 to 45	560	3,761	 	4,321	0.2
	percent slopes	4,525	29,993		34,518	1.2
357 360	Heshotauthla clay, 0 to 1 percent slopes   Hosta-Concho association, 0 to 5 percent		1,327	 	1,327	   * 
	slopes	617	35,231	i	35,848	1.3
361 365	Monpark silty clay, 2 to 8 percent slopes   Vessilla-Rock outcrop complex, 2 to 15	1,618	1,734	 	3,352	0.1
	percent slopes		60,187		60,187	2.1
366	Bosonoak loam, 1 to 5 percent slopes		2,654	i	2,987	0.1
367	Chunkmonk very gravelly fine sandy loam, 2 to   10 percent slopes		   2,270	 	2,270	   *
368	Simitarq-Celavar sandy loams, 2 to 8 percent   slopes		25,686	 	25,686	0.9
375	Todest-Shadilto complex, 2 to 8 percent   slopes		,   7,001	 	   7,001	0.2
376	Todest fine sandy loam, 2 to 8 percent slopes		3,688		3,688	0.1
380	Berryhill-Casamero clays, 2 to 10 percent   slopes		5,364	   	5,364	0.2
385	Mcorreon-Rock outcrop complex, 10 to 40     percent slopes		7,936	   	7,936	   0.3
390	Banquito very fine sandy loam, 1 to 3 percent		1,933	   	1,933	     *
395	Cabezon-Mcorreon complex, 2 to 8 percent     slopes		2,445	   	2,445	     *
400	Shoemaker-Stozuni complex, 2 to 8 percent   slopes	3,178	8,442	   	11,620	   0.4
403		1,285	4,329	   	5,614	0.2
404	Rock outcrop-Techado-Stozuni complex, 5 to 60    percent slopes		20,154	   	22,607	0.8
405	Fortwingate-Owlrock complex, 2 to 8 percent   slopes		11,209	   	11,209	0.4
406	Polich silt loam, 0 to 3 percent slopes		392		392	*
407	Cinnadale-Heckly association, 5 to 40 percent   slopes		İ	   	į	
100	1 -		2,112	 	2,112	1 ^1
408 409	Mirabal-Zuni complex, 1 to 40 percent slopes-  Rauster-Rock outcrop complex, 5 to 35 percent   slopes		3,419	   	3,419	0.1
410	Slopes    Montillo-Tsoodzil complex, 5 to 35 percent     slopes		1,497	   	1,497	*
411	Ligocki-Robolata complex, 1 to 5 percent	116	4,823		4,939	0.2
	slopes		2,911 	 	2,911 	0.1

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map	Soil name	Cibola	   McKinley	   San Juan	Tota	al
symbol	SOII name	County	County	County	Area	Extent
SYMBOI	 	County	Country	Country	Area	Extent
		Acres	Acres	Acres	Acres	Pct
412	Rock outcrop-Rionutria-Zaster association, 15		 	 		 
	to 80 percent slopes		1,310	i	1,310	*
413	Morclay silty clay, 1 to 5 percent slopes		685	i	685	*
414	Zunalei-Corzuni loamy fine sands, 2 to 10		İ	İ	İ	į
	percent slopes	1,250	5,369	i	6,619	0.2
415	Tsoodzil-Rubble land complex, 10 to 55		İ	İ	İ	i
	percent slopes		4,673	i	4,673	0.2
416	Rock outcrop-Bluesky complex, 5 to 80 percent		i	İ	i	i
	slopes		1,155		1,155	*
418	Asaayi-Osoridge complex, 2 to 15 percent		i	İ	i	i
	slopes		3,795		3,795	0.1
419	Fortwingate-Cinnadale-Rock outcrop complex, 5		i	i	i	i
	to 45 percent slopes		1,768		1,768	*
420	Seco clay loam, 1 to 5 percent slopes		1,132		1,132	*
425	Montillo-Canoneros complex, 2 to 6 percent		i	İ	, , , , , , , , , , , , , , , , , , ,	i
	slopes	198	13,430		13,628	0.5
430	Montillo gravelly loam, 2 to 6 percent slopes	330	15,067	1	15,397	0.5
435	Tsoodzil-Amcec association, 5 to 50 percent			İ		
	slopes	126	10,975		11,101	0.4
440	Chivato clay, 0 to 1 percent slopes		1,131	1	1,131	*
525	Silcat clay loam, 1 to 10 percent slopes	3,065		1	8,165	0.3
550	Bryway-Galzuni loams, 1 to 8 percent slopes	7,803	32,118		39,921	1.4
555	Parkelei-Evpark fine sandy loams, 2 to 8	.,	,	i	1	
555	percent slopes	4,593	58,325	l	62,918	2.2
560	Flugle-Teczuni complex, 1 to 5 percent slopes	1,787	4,329	 	6,116	0.2
561	Flugle-Plumasano association, 2 to 8 percent	1,	1,323	İ	0,110	
301	slopes	9,000	11,459	l	20,459	0.7
565	Plumasano-Rock outcrop complex, 15 to 40	3,000	11,133	İ	1	
505	percent slopes	4,635	21,047	l	25,682	0.9
566	Bamac extremely gravelly sandy loam, 5 to 50	4,055	21/01/	l I	23,002	1
500	percent slopes		4,524	l	4,524	0.2
575	Ramah-Pescado association, 1 to 8 percent		1/324	İ	1/324	0.2
575	slopes		1,528	I	1,528	   *
	510000		1 1,520	i	1 1,520	1
		79 668	2,699,606	1 58 265	2,837,539	100.0
	10001	13,000	12,099,000	J0,200	2,057,559	1 100.0

 $<sup>^{\</sup>star}$  Less than 0.1 percent.

Table 5.--Land Capability for Irrigated Land and Yields Per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for irrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol		  Alfalfa hay	Corn	Pasture	   Wheat
and soil name	capability	 	 		
40: Nuffel	     4w	Tons	Bu 25.00	AUM 5.00	Bu   20.00
42: Suwanee	     4w	3.00	30.00	4.00	25.00
44: Suwanee	     4w	3.00	40.00	5.00	25.00
45: Nutreeah	     3s	3.00	40.00	5.00	   25.00
47: Conchovar	   3s 	4.00	30.00	5.00	30.00
49: Concho	   3c	4.00	30.00	4.00	30.00
51: Kwakina	4e	   4.00	30.00	4.00	20.00
52: Zuniven	-     4w 	   	30.00	3.00	20.00
53: Hawaikuh	   2s 	   	30.00	4.00	20.00
54: Venadito	   4w 	3.00	20.00	5.00	20.00
55: Sparham	   4w	3.00	20.00	5.00	20.00
60: Redpen	   2c 	4.00	30.00	4.00	20.00
225: Aquima	   3e	3.00	30.00	4.00	20.00
Hawaikuh	1   3e	3.00	30.00	4.00	20.00
310: Parkelei	     4e 	     4.00	30.00	5.00	30.00
312: Bluewater	     3s	   	   	4.00	   
325: Venzuni	     3s	2.00	30.00	4.00	30.00
335: Venadito	 	2.00	15.00	5.00	20.00

Table 5.--Land Capability for Irrigated Land and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	  Alfalfa hay 	Corn	Pasture	Wheat
		Tons	Bu	AUM	Bu
336:		 			
Nuffel	4w	3.00	60.00	5.00	30.00
Venadito	4w	3.00	60.00	8.00	30.00
352:					
Zia	3e	4.00	30.00	4.00	20.00
353:			45.00		
Mido	3e	3.00	15.00	5.00	20.00
354: Knifehill	   3c	3.00	   15.00	5.00	30.00
	. 30	]	13.00	3.00	
357: Heshotauthla	4w	3.00	15.00	5.00	30.00
525:					
Silcat	4e	3.00	15.00	5.00	30.00
550:		 			
Bryway	4e	3.00	15.00	5.00	30.00
Galzuni	4e	3.00	15.00	5.00	30.00
575:		 			
Ramah	3c	4.00	30.00	4.00	30.00

Table 6.--Rangeland Productivity and Characteristic Plant Communities  $(\mbox{Only the soils that support rangeland vegetation suitable for grazing are rated.)}$ 

Map symbol	   Ecological site	Total di	ry-weight pr	oduction	   Characteristic vegetation   	   Composition
and soil name	Ecological Site	Favorable   year	Normal   year	Unfavorable   year		Composition   
10		Lb/acre	Lb/acre	Lb/acre		
10: Tsosie	  - Salt Flats         	700           	   500           	i   	alkali sacaton	15   10   5   5   5   5
Councelor	  Sandy   	900	     600     	300	western wheatgrass	5   20   10   5   5   5   5   5
			 	           	spike dropseed	5   3   3   3
Blancot	- Loany	800	   500                       		big sagebrush	15   10   10   5   5   5   5   5   5   5

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	   Composition	
and soil name		Favorable   year	Normal   year	Unfavorable   year			
	_	Lb/acre	Lb/acre	   Lb/acre		Pct	
11:			 			 	
Doakum	- Loamy	800	500	İ	western wheatgrass   big sagebrush	15	
			 		blue grama   Indian ricegrass	15 1 10	
		İ	! 		galleta		
	İ	İ	İ	İ	alkali sacaton	5	
					bottlebrush squirreltail		
					fourwing saltbush		
					galleta	'	
					needle and thread		
			l I	l I	oneseed juniperother annual forbs		
		1	 		miscellaneous perennial forbs	-	
		İ	 		perennial forbs		
	i	İ		i	sand dropseed	5	
	İ	İ	İ	İ	western wheatgrass		
					winterfat	5	
					muttongrass	'	
					miscellaneous perennial forbs		
					rabbitbrush		
					winterfat   Mormon tea	1	
		I I	 		spineless horsebrush	!	
			 		twoneedle pinyon		
		İ	! 				
Betonnie	Sandy	900	600	300	Indian ricegrass		
					blue grama		
					big sagebrush		
					bottlebrush squirreltail		
				ļ	needle and thread		
			l I	l I	sand dropseed		
			 		winterfat		
		İ	 		mesa dropseed		
		İ			Mormon tea		
	İ	İ	İ	İ	other annual forbs		
		İ		İ	miscellaneous perennial forbs	3	
			 		giant dropseed	2	
12: Calladito	Poor Cond	1 100	     800	F00	Indian migagrage	20	
Calladico	- Deep Sand	1,100	800 		Indian ricegrass   fourwing saltbush	30	
			 		galleta		
		İ	 	İ	sand dropseed		
		İ		İ	blue grama		
	İ	İ	İ	i	sand sagebrush		
					spike dropseed		
					broom snakeweed		
					mesa dropseed		
	!	!		!	sandhill muhly		
					giant dropseed		
					Mormon tea		
		1	 	1	needle and thread	2	
	T	1	I	1	I	I	

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	ry-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year		
		Lb/acre	   Lb/acre	Lb/acre	   	   Pct
12:	 		 		 	 
Elias	Sodic Slopes	500	350	200	alkali sacaton	30
	İ	j	İ	İ	galleta	20
					blue grama	5
					fourwing saltbush	
					greasewood	
					mound saltbush	5
					western wheatgrass	
					big sagebrush	
					other annual forbs	3
					miscellaneous perennial forbs	
					shadscale saltbush	3
		 	 		threeawn	] 3 
13: Councelor	Conde	900	   600	200	    Indian ricegrass	     20
Conficeror	Sandy	] 900	600	] 300	blue grama	
	1		l i		big sagebrush	
	1		l i		bottlebrush squirreltail	
	1	l I	 	I	needle and thread	-
	1	l	 	I I	sand dropseed	•
	1		 		spike dropseed	
	I I		 		winterfat	
	I I		 		mesa dropseed	
	I I		 		Mormon tea	
	 	i i	 	i I	other annual forbs	
	1	i	! 		miscellaneous perennial forbs	l 3
					giant dropseed	2
Calladito	Deep Sand	1,100	   800	500	  Indian ricegrass	   30
					fourwing saltbush	10
					galleta	10
					sand dropseed	10
					blue grama	
					sand sagebrush	
					spike dropseed	
					broom snakeweed	
	ļ			İ	mesa dropseed	
	ļ			İ	sandhill muhly	•
	ļ			İ	Mormon tea	
	ļ			İ	giant dropseed	
	!			ļ	needle and thread	2

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year		
		Lb/acre	Lb/acre	Lb/acre		Pct
14:			 		 	1
Councelor	Sandv	900	l 600	300	Indian ricegrass	20
		i		i	blue grama	
	į	į	İ	i	big sagebrush	
	į	j	ĺ	İ	bottlebrush squirreltail	5
		ĺ		İ	needle and thread	5
		ĺ		İ	sand dropseed	
		ĺ		İ	spike dropseed	5
					winterfat	5
					mesa dropseed	
					Mormon tea	3
					other annual forbs	3
					miscellaneous perennial forbs	
			  -		giant dropseed	2
Eslendo	Shallow	600	350	150	  Indian ricegrass	15
					New Mexico Feathergrass	
					galleta	1
					Ephedra	1
					alkali sacaton	
					big sagebrush	1
					blue grama	!
					bottlebrush squirreltail	1
					fourwing saltbush	1
	!	ļ		!	other annual forbs	1
	!	ļ		!	miscellaneous perennial forbs	1
		ļ		!	Bigelow sagebrush	1
					rabbitbrush	1
			 	1	sand dropseed	3
Calladito	Deep Sand	1,100	800	500	Indian ricegrass	!
					fourwing saltbush	
					galleta	
					sand dropseed	
					blue grama	•
					sand sagebrush	
					spike dropseed	•
	!	!		ļ.	broom snakeweed	1
	!	!		ļ	mesa dropseed	1
	!			ļ	sandhill muhly	
	!	1		ļ.	Mormon tea	
	!	1		ļ.	giant dropseed	
				-	needle and thread	2

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total d	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year		
		Lb/acre	Lb/acre	Lb/acre		Pct
16:			 	I I	 	 
Starlake	Sodic Slopes	500	350	200	alkali sacaton	30
					galleta	20
					blue grama	5
					fourwing saltbush	
					greasewood	
					mound saltbush	
					western wheatgrass	
					other annual forbs	
					miscellaneous perennial forbs	
					shadscale saltbush	3
	 		 		threeawn	] 3 
22:		į				
Querencia	Loamy	1,500	1,000	500	blue grama	
					western wheatgrass	'
					miscellaneous perennial forbs	
					spike muhly	
					alkali sacaton	
					bottlebrush squirreltail	5 l 5
	 		 		fourwing saltbush   galleta	
					. –	
	 		 		other annual forbs	
	 		 		•	
	 		 		oneseed juniper	ı
	 		 		rabbitbrush	±   1
	 		l I		spineless horsebrush	±   1
			 		spineress norsebrush	+
Lavodnas	Shallow	850	550	300	winterfat	20
					Indian ricegrass	
					alkali sacaton	
					galleta	
					needle and thread	
					blue grama	5
					fourwing saltbush	
		!		!	western wheatgrass	
		!		!	Bigelow sagebrush	
	!			ļ.	other annual forbs	1
	!			ļ.	miscellaneous perennial forbs	
	!			ļ.	Mormon tea	
	!			ļ.	oneseed juniper	
				1	twoneedle pinyon	1
	I	1		1		

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	ry-weight pr	oduction	Characteristic vegetation	   Composition
and soil name		Favorable     year	Normal year	Unfavorable   year		<u> </u> 
		   Lb/acre	Lb/acre	Lb/acre		Pct
30:						
Orlie	Loamy	1,100	850	600	western wheatgrass	
	!				Indian ricegrass	
				1	big sagebrush	
					blue grama   bottlebrush squirreltail	
		-		-	galleta	
	i	i i		i i	winterfat	!
	i	i		i	broom snakeweed	
	i	i i		i	muttongrass	
	i	i i		İ	other annual forbs	
	İ	j i		İ	miscellaneous perennial forbs	3
					rabbitbrush	3
					spineless horsebrush	
	ļ				oneseed juniper	
					twoneedle pinyon	2
Tinian	Loamy	1,100	850	600	  western wheatgrass	20
					Indian ricegrass	
					big sagebrush	
	ļ			!	blue grama	
	!				bottlebrush squirreltail	
					galleta	
					other annual forbs	
	-			l I	winterfat	
	-	-			muttongrass	
	i	i i		i i	oneseed juniper	
		į			twoneedle pinyon	
0:					 	 
Nuffel	Bottomland	4,500	3,000	1,250	alkali sacaton	•
	ļ			!	western wheatgrass	
				ļ	fourwing saltbush	!
					blue grama   galleta	
				I I	miscellaneous perennial forbs	
	-	-			spike muhly	
	i	i		İ	mat muhly	
	i	i i		i	other annual forbs	
	i	i i		i	sand dropseed	
		į į		į	spineless horsebrush	
2:					 	
Suwanee	Bottomland	4,500	3,000	1,250	alkali sacaton	
	İ	į i		!	western wheatgrass	
					fourwing saltbush	
					blue grama	
	1			1	galleta	1
	 			I I	miscellaneous perennial forbs  spike muhly	
					mat muhly	
					other annual forbs	
	i	i i		i	sand dropseed	
	1					

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal year	Unfavorable   year		 
		Lb/acre	Lb/acre	Lb/acre	   	   Pct 
44 : Suwanee	  Clayey Bottomland   	4,000	3,000	   1,250     	western wheatgrass	20   10   10   5
				         	mat muhly mat muhly mat muhly lother annual forbs miscellaneous perennial forbs broom snakeweed rabbitbrush	3   3   2   1
45: Nutreeah	   Clayey         	1,200	1,000	   800                   	western wheatgrass	15 5 5 5 5 5 5 5 5 5 5 5 7 3
47: Conchovar	   Salty Bottomland   	2,500	1,500	   800                 	alkali sacaton	30 20 10 10 10 10 5 5 5 5 5
49: Concho	   Clayey         	1,200	1,000	   800                 	western wheatgrass	15   5   5   5   5   5   5   5

 ${\tt Table \ 6.--Productivity \ and \ Characteristic \ Plant \ Communities--Continued}$ 

Map symbol	Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	   Compositio
and soil name		Favorable   year	Normal year	Unfavorable   year	 	 
		   Lb/acre	Lb/acre	Lb/acre	 	   Pct
51:			 		 	 
Kwakina	Bottomland	4,500	3,000	1,250	alkali sacaton	30
					western wheatgrass	
	ļ			ļ	fourwing saltbush	
	!			ļ	blue grama	
				-	galleta	
	l I		l i	I	miscellaneous perennial forbs  spike muhly	
	I I		 	I I	mat muhly	
			 	1	other annual forbs	
			 		sand dropseed	
	İ			i	spineless horsebrush	1 1
52: Zuniven	  Riparian		 		  cottonwood	 
		i		i	rush	
	į			į	willow	
53:						 
Hawaikuh	Clayey	1,200	1,000	800	alkali sacaton	20
					western wheatgrass	
					galleta	10
					Indian ricegrass	
				ļ	blue grama	
	!			ļ	bottlebrush squirreltail	
					broom snakeweed	1
				ļ	fourwing saltbush	
				ļ	threeawn	1
			l I		winterfat   mat muhly	
	l I			I	spike muhly	
			 		oneseed juniper	
54:			 			 
Venadito	Clayey Bottomland	2,500	1,600	800	alkali sacaton	30
	į	j	ĺ	İ	western wheatgrass	15
					fourwing saltbush	10
					blue grama	!
					greasewood	!
					inland saltgrass	
				ļ	other annual forbs	
	!			ļ	miscellaneous perennial forbs	:
			 		mat muhly	3 
55:		1 700	1 200			 
Sparham	SWaie	1,700	1,200	1 800	western wheatgrass blue grama	
	 		 	I.	big sagebrush	
	 		 	I.	muttongrass	
			 	1	rabbitbrush	
			 	1	broom snakeweed	1
			! 		other annual forbs	1
	İ	i	İ	ì	miscellaneous perennial forbs	
	i	i	İ	i	sedge	2
	1		I	i	I	

Table 6.--Productivity and Characteristic Plant Communities--Continued

Ecological site	Favorable	Normal	Unfavorable	Characteristic vegetation	COMPOSICION
	year	year	year		Composition 
	Lb/acre	Lb/acre	Lb/acre		Pct
- Loamy	1,500	1,000	500	blue grama	20
				western wheatgrass	20
					1
				rabbitbrush	1
	 			spineless horsebrush	1 
  -   Candy Loam Unland 5-8 Pz	250	200	100	Indian ricegrass	   20
Sandy Loan Optand 5 0 12	250	200	1 100		
			1		
			1		
				•	
				•	'
				-	ı
				•	
				sand dropseed	1
 - Sandstone Upland 5-8"	   250	200	100	  Indian ricegrass	   20
P.z.					10
				galleta	10
				black grama	5
				blue grama	5
				fourwing saltbush	5
	l İ				
				sand dropseed	5
	l İ				
	ĺ				
	ĺ			other annual forbs	3
	l i				
	l i			narrowleaf yucca	1
	Sandy Loam Upland 5-8 Pz	Sandy Loam Upland 5-8 Pz 250	Sandy Loam Upland 5-8 Pz   250   200	Sandy Loam Upland 5-8 Pz   250   200   100   - Sandstone Upland 5-8"   250   200   100   P.z.	western wheatgrass   miscellaneous peremial forbs-spike muhly   alkali sacaton   bottlebrush squirreltail   fourwing saltbush   galleta   other annual forbs   winterfat   oneseed juniper   broom snakeweed   rabbitbrush   spineless horsebrush   spineless horsebrush   land sacaton   blue grama   other annual forbs   rabbitbrush   spineless horsebrush   land sacaton   blue grama   other annual forbs   rabbitbrush   land sacaton   blue grama   other annual forbs   shadscale saltbush   miscellaneous peremial forbs   land sacaton

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total d	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name	-   	Favorable year	Normal   year	Unfavorable   year	 	i !
		Lb/acre	Lb/acre	Lb/acre		Pct
110:						
Benally	Loamy Upland (sodic) 5-8"	500	400	300	alkali sacaton	
	P.z.	 	 		mound saltbush	
	I I	 	 	i i	Indian ricegrass	
	i			İ	blue grama	
	İ	ĺ	ĺ	İ	other annual forbs	3
	ļ			!	miscellaneous perennial forbs	'
	1	 	 		sand dropseedshadscale saltbush	'
		 	 			1
Fruitland	Sandy Upland 5-8" P.z.	550	400	300	Indian ricegrass	
	ļ			!	blue grama	
	1				galleta   fourwing saltbush	
	] 	 	 		winterfat	
	i	! 	! 	ì	bottlebrush squirreltail	
	İ	İ	İ	į	miscellaneous perennial forbs	3
	I				other annual forbs	•
	ļ				sand dropseed	
			 		broom snakeweed	1
	I I	 	 		sandhill muhly	1
		! 	! 	İ		
111:	į			İ		į
Yelives	Loamy Upland 5-8" P.z.	550	450	350	blue grama	
	] 	 	 		western wheatgrass   Indian ricegrass	
	i	! 	 	i	fourwing saltbush	
	İ	İ		İ	sand dropseed	
	1				needle and thread	5
	ļ			ļ	other annual forbs	1
		 	 		miscellaneous perennial forbs  spike dropseed	
	I I	 	 		winterfat	
	i		! 	i	galleta	
	İ	İ	İ	İ	ring muhly	
	Į.			Į.	rabbitbrush	
				1	sand sagebrush	•
	 	 	 		spineless horsebrush	±
115:	İ	İ	İ	İ	İ	İ
Razito	Sandy Upland 5-8" P.z.	500	350	250	Indian ricegrass	
				1	Ephedra   blue grama	
	] 	 	 	1	galleta	
	I I	 	 	i i	sand dropseed	
	i			İ	sandhill muhly	5
					spike dropseed	3
	[			!	broom snakeweed	2
					fourwing saltbush	
	 	 	 	1	giant dropseed   needle and thread	
	] 	! 	! 		other annual forbs	
				i	miscellaneous perennial forbs	1
	İ	İ	İ	İ	rabbitbrush	
	<u> </u>			!	winterfat	1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total d	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year	·	Composition
		Lb/acre	Lb/acre	Lb/acre	   	   Pct 
115: Shiprock	  Sandy Loam Upland 5-8 Pz	     550	400	300	    Indian ricegrass	     30
	1	[			blue grama	
					galleta	10
					fourwing saltbush	
					winterfat	5
					bottlebrush squirreltail	!
					miscellaneous perennial forbs	3
					other annual forbs	!
					sand dropseed	2
					broom snakeweed	
					rabbitbrush	1
		 			sandhill muhly	1
116:						 
Fajada	Loamy Upland (sodic) 5-8"	500	400	300	alkali sacaton	
	P.z.				mound saltbush	
					saltbush	
					galleta	10
					Indian ricegrass	
					blue grama	!
					other annual forbs	
					miscellaneous perennial forbs	
					sand dropseed	1
		 	Į I		shadscale saltbush	1
Huerfano	Loamy Upland (sodic) 5-8"	500	400	300	  alkali sacaton	25
	P.z.				mound saltbush	15
					galleta	10
					Indian ricegrass	5
					blue grama	3
					other annual forbs	3
					miscellaneous perennial forbs	
					sand dropseed	1
		 	Į I		shadscale saltbush	1
Benally	Loamy Upland (sodic) 5-8"	   500	400	300	  alkali sacaton	
	P.z.				mound saltbush	15
	I				galleta	10
	I				Indian ricegrass	5
	I				blue grama	3
	I				other annual forbs	3
	I				miscellaneous perennial forbs	
	I				sand dropseed	1
	I				shadscale saltbush	1
				I		

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	ry-weight pr	oduction	   Characteristic vegetation	Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year		
		Lb/acre	Lb/acre	Lb/acre		   Pct
118:	 				 	 
Farb	Sandstone Upland 5-8"	250	175	100	Indian ricegrass	
	P.z.				Bigelow sagebrush	
	ļ				galleta	
	1				Ephedra	
	1	 	 		New Mexico Feathergrass    black grama	
	1	 	 		blue grama	•
	1	 	 	1	fourwing saltbush	1
	İ	 	 	I I	sand dropseed	
	i			i	shadscale saltbush	
	i			İ	sideoats grama	•
	İ	İ		İ	other annual forbs	3
					miscellaneous perennial forbs	2
					narrowleaf yucca	1
Chipeta	Breaks 5-8" P.z.	300	225	150	  mat saltbush	   55
	İ	İ		İ	galleta	10
	1				miscellaneous shrubs	10
					Native American pipeweed	5
	!				bottlebrush squirreltail	•
	ļ				bud sagebrush	•
	1				miscellaneous perennial forbs	
		 			miscellaneous perennial grasses	5 
Rock outcrop						
120:		 	 		 	 
Doak	Loamy Upland 5-8" P.z.	550	400	350	galleta	25
	İ	İ		İ	Indian ricegrass	15
	İ	ĺ		İ	fourwing saltbush	10
					alkali sacaton	!
	I				black grama	
	ļ				blue grama	
					bottlebrush squirreltail	•
					miscellaneous perennial forbs	!
	1	 	l I	I I	rabbitbrush	!
		 	 		sand dropseed	
		 			other annual forbs	
Shiprock	Sandy Loam Upland 5-8 Pz	550	425	300	Indian ricegrass	!
					blue grama	10
	1	 	l I	I I	galleta   fourwing saltbush	10   5
	1	 	 	1	winterfat	
	i	 		İ	bottlebrush squirreltail	
	i	! 	 		miscellaneous perennial forbs	
	i	İ		i	other annual forbs	2
	İ	İ		İ	sand dropseed	2
	İ	İ		İ	broom snakeweed	1
	1				rabbitbrush	
	[				sandhill muhly	1
121:		 	 		 	 
Badland	 	l 	l 		 	I I
			<u> </u>	İ		

 ${\tt Table \ 6.--Productivity \ and \ Characteristic \ Plant \ Communities--Continued}$ 

Map symbol	Ecological site	Total di	ry-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year	-	
	   	Lb/acre	   Lb/acre	Lb/acre	   	   Pct 
122: Farb	  Sandstone Upland 5-8"   P.z. 	   250   	   175     	100	   Indian ricegrass	10 10 10 5 1 5
	 	           		           	blue grama	5   5   5   5   5   3
Rock outcrop						
130:	  Loamy Terrace 5-8" P.z.               	   600                   	   500                   		Indian ricegrass	20   15   10   7   5   5   5   2   2
Chipeta	Breaks 5-8" P.z.             	300	225           	150             	mat saltbush	10   10   5   5   5
Badlands	·  	<u></u>		j	 	
Moncisco	Porcelanite Hills 5-8"   P.z.         	550               	450         	350           	alkali sacaton	20   15   10   5   5

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total d	ry-weight pr	oduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year	•	   
		Lb/acre	Lb/acre	Lb/acre		Pct
150: Riverwash	 	   	   		   	   
Escawetter	Sandy Bottomland   (subirrigated) 	3,000	2,000       	<u> </u> 	alkali sacaton  inland saltgrass  Indian ricegrass  miscellaneous perennial grasses   saltcedar  sand dropseed	20   10   5   5
	       	       	       	İ	western wheatgrass	5   3   3
160: Escawetter	   Sandy Bottom   (subirrigated) 5-8" P.z.     	1,000 	   800             	 	alkali sacaton	20 10 5 5 5 5 1 5 1 3
Riverwash		 	 		 	 
Razito	Sandy Upland 5-8" P.z.                     	500                     	400 	 	Indian ricegrass	10   5   5   5   5   3   2   2   2   2   2
205: Penistaja	   Loamy             	1,500                     	1,000                     	 	blue grama	20   8   8   5   5   5   5   5   5   2

 ${\tt Table \ 6.--Productivity \ and \ Characteristic \ Plant \ Communities--Continued}$ 

Map symbol	Ecological site	Total di	ry-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name	İ	Favorable	Normal	Unfavorable	İ	İ
	ļ	year	year	year		
	-  	Lb/acre	Lb/acre	Lb/acre	<u></u> 	   Pct
205:						
	 - Sandy	1,200	900	600	  blue grama	25
	İ	j		İ	western wheatgrass	15
					Indian ricegrass	10
	İ	j		İ	sand dropseed	10
	İ	j		İ	fourwing saltbush	
	İ	j	ĺ	İ	other annual forbs	
	İ	j	İ	i	miscellaneous perennial forbs	J 5
	i	j	İ	i	spike dropseed	5
	i	i		i	winterfat	
	i	i		i	  galleta	3
	i	i		i	ring muhly	
	İ	i		i	oneseed juniper	2
		i	 	i	rabbitbrush	
		i	 	i	sand sagebrush	
		i	 		sand sagebrush	
		i	 		spineless horsebrush	
		i			 	
208: Marianolake	Loamy	1,500	1,000		  blue grama	   20
Marianorake	-   LOanty	1,500	1,000	] 500	-	
					western wheatgrass	
			l I		miscellaneous perennial forbs	
					spike muhly	
					alkali sacaton	
					bottlebrush squirreltail	
					fourwing saltbush	
					galleta	
					other annual forbs	
	!				winterfat	!
	!				oneseed juniper	
					broom snakeweed	1
					rabbitbrush	
					spineless horsebrush	1 
210:	İ	j		<u> </u>		İ
Marianolake	Loamy	1,500	1,000	500	blue grama	
					western wheatgrass	
					miscellaneous perennial forbs	
					spike muhly	
					alkali sacaton	!
					bottlebrush squirreltail	
					fourwing saltbush	
					galleta	
					other annual forbs	
					winterfat	
		i i			oneseed juniper	2
		i i			broom snakeweed	
		i i			rabbitbrush	1
		i i			spineless horsebrush	1
		i i				

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable year	Normal   year	Unfavorable   year	•	
		Lb/acre	Lb/acre	Lb/acre 		Pct
210: Skyvillage		700	500	275	  Bigelow sagebrush	10
Skyviiiage	Sharrow Sandstone	700	] 300	2/3	blue grama	
	l I		l I		fourwing saltbush	
	l				galleta	
	!				Indian ricegrass	•
	ļ.				New Mexico Feathergrass	!
	ļ.	ļ.		!	little bluestem	
					shadscale saltbush	
					sideoats grama	
					winterfat	
					cliffrose	
					Mormon tea	3
					oneseed juniper	3
					twoneedle pinyon	2
212:						
Rehobeth	Salty Bottomland	2,500	1,600	800	alkali sacaton	
					western wheatgrass	20
					bottlebrush squirreltail	
					fourwing saltbush	
					galleta	10
					big sagebrush	5
	İ	ĺ		İ	blue grama	5
	İ	j	İ	İ	greasewood	5
	i	į	İ	i	inland saltgrass	I 5
	i	i		i	other annual forbs	
	i	i		i	miscellaneous perennial forbs	•
	ļ			į	mat muhly	
215:						 
Viuda	Malpais	500	350	200	blue grama	
					galleta	15
	I				alkali sacaton	10
	İ	ĺ		İ	hairy grama	10
	İ	j	İ	İ	sideoats grama	10
	İ	j	İ	İ	black grama	5
	i	į	İ	i	common wolfstail	I 5
	i	į	İ	i	fourwing saltbush	5
	i	į	İ	i	little bluestem	
		į		į	spike muhly	1
Penistaja	  Loamy	1,500	1,000	500	  blue grama	20
~	İ			i	western wheatgrass	•
	i	i		i	miscellaneous perennial forbs	•
	i		 		spike muhly	
	i		 		alkali sacaton	
			! 	1	bottlebrush squirreltail	
	-		 		fourwing saltbush	
	 		 	I I	galleta	] 5 ] 5
	1		] 	1		
	1		 	1	other annual forbs	
	1		  -	1		
	!			1	oneseed juniper	2
	!			ļ.	broom snakeweed	
			  -		rabbitbrush   spineless horsebrush	1
			 		  aprieress norsepiusn	
Rock outcrop						
		İ			I	

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	ry-weight pr	roduction	   Characteristic vegetation	Composition
and soil name	 	Favorable year	Normal year	Unfavorable   year	 	   
	   	Lb/acre	Lb/acre	Lb/acre		   Pct 
220: Hagerwest	  -  Loamy 	1,500	1,000	500	  blue grama   western wheatgrass	
	 				miscellaneous perennial forbs  spike muhly	8
					bottlebrush squirreltail   fourwing saltbush	5   5
	   				galleta   other annual forbs   winterfat	5
	 				oneseed juniper   broom snakeweed   rabbitbrush	1
			500		spineless horsebrush	   1 
Bond	- Shallow Sandstone   	700   	500	275	Bigelow sagebrush   blue grama   fourwing saltbush	10
					Indian ricegrass   New Mexico Feathergrass   galleta	5
					little bluestem	5   5
	 				miscellaneous perennial forbs   sideoats grama   winterfat	5
					Ephedra   cliffrose   oneseed juniper	3
					twoneedle pinyon	
225: Aquima	 - Loamy 	1,500	1,000	500	  blue grama   western wheatgrass	
					miscellaneous perennial forbs  spike muhly	8
					bottlebrush squirreltail   fourwing saltbush	5   5
	   				galleta   other annual forbs   winterfat	5
	ļ				oneseed juniper	1
	 				spineless horsebrush	1 
Hawaikuh	- Clayey       	1,200	1,000	800     	alkali sacaton	20   10   5
	 				bottlebrush squirreltail broom snakeweed fourwing saltbush	5   5   5
	 				threeawn   winterfat   mat muhly	5   3
					spike muhly  	2

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	y-weight pr	oduction	   Characteristic vegetation	   Composition
and soil name		Favorable     year	Normal year	Unfavorable   year		
	   	   Lb/acre	Lb/acre	Lb/acre	<del></del>   	   Pct
230:						
Sparank	Clayey Bottomland	4,000	2,500	1,250	western wheatgrass	
					alkali sacaton	
	l I	 		I I	fourwing saltbush galleta	
		 			blue grama	
				İ	spike muhly	•
		i		i	mat muhly	
	j	İ		İ	other annual forbs	
	į	į į		İ	miscellaneous perennial forbs	2
					broom snakeweed	1
					rabbitbrush	1
San Mateo	Bottomland	4,500	2,600	1,250	  alkali sacaton	30
					western wheatgrass	20
					fourwing saltbush	1
				!	blue grama	1
					galleta	!
					miscellaneous perennial forbs	
		 		l I	spike muhly	
		 			other annual forbs	
				1	sand dropseed	
					spineless horsebrush	1
<b>7</b>	la. 1		000			
Zia	Sandy	1,200	900	600	blue grama	
	l I	 		I I	western wheatgrass   Indian ricegrass	
				1	sand dropseed	
		i i		i	fourwing saltbush	
	i	i i		İ	other annual forbs	
	j	i i		İ	miscellaneous perennial forbs	5
	İ	İ		İ	spike dropseed	5
					winterfat	5
					galleta	!
				!	ring muhly	
					oneseed juniper	
					rabbitbrush	!
	l I	 		I I	sand sagebrush	1   1
					spineless horsebrush	
225						
235: Notal	Clay Loam Terrace (sodic)	   600	500	400	  alkali sacaton	   30
•	5-8" P.z.			İ	mound saltbush	25
	j	j j		İ	galleta	10
					greasewood	5
Hamburn	Saline Bottom 5-8" P.z.	   1,600	1,200	800	  alkali sacaton	   50
	İ			İ	galleta	
		ı i			Indian ricegrass	10
		l İ			mound saltbush	10
	ļ			ļ	miscellaneous perennial grasses	
				!	western wheatgrass	
				!	miscellaneous shrubs	
		<u> </u>		Į.	perennial forbs	
					black greasewood	
İ	1			1	fourwing saltbush	1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total dr	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable     year	Normal year	Unfavorable   year		
		 Lb/acre	Lb/acre	Lb/acre	<u> </u>	Pct
240:						 
Breadsprings	- Salty Bottomland	2,500	1,600	800	alkali sacaton	•
					western wheatgrass	
				1	bottlebrush squirreltail	
				}	fourwing saltbush   galleta	
				i i	big sagebrush	
	İ	i i			blue grama	
	İ	i i		İ	greasewood	
	İ	į į		İ	inland saltgrass	5
					other annual forbs	
				ļ	miscellaneous perennial forbs	
					mat muhly	] 3 
Nahodish	- Salty Bottomland	2,500	1,600	800	alkali sacaton	30
	İ	j		Ì	western wheatgrass	
					fourwing saltbush	10
					blue grama	
					bottlebrush squirreltail	
					greasewood	
					inland saltgrass mound saltbush	
					other annual forbs	
		i i		Ì	miscellaneous perennial forbs	•
	İ	i i		İ	mat muhly	
	į	į į		į	rabbitbrush	
241:						
Mentmore	- Loamy	1,500	1,000	500	western wheatgrass	
					Indian ricegrass	
					big sagebrush   blue grama	
		-			bottlebrush squirreltail	
		i i		Ì	galleta	
		i		i	oneseed juniper	
	İ	j j		j	winterfat	
					broom snakeweed	3
					muttongrass	
					other annual forbs	
				1	miscellaneous perennial forbs  rabbitbrush	1
					spineless horsebrush	1 2
	į				twoneedle pinyon	_
242:					 	
Gish	- Clayey	1,200	1,000	800	western wheatgrass	
				J	alkali sacaton	
					big sagebrush	
					blue grama	
				I	bottlebrush squirreltail	1
				I.	fourwing saltbush   galleta	!
				İ	other annual forbs	
		j ;		ì	miscellaneous perennial forbs	•
		j		i	Indian ricegrass	
		j		İ	rabbitbrush	

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	ry-weight pr	roduction	   Characteristic vegetation	Composition
and soil name	İ	Favorable	Normal	Unfavorable	İ	İ
		year	year	year		
		   Lb/acre	Lb/acre	Lb/acre		   Pct
242:					 	
Mentmore	Loamy	1,500	1,000	500	western wheatgrass	20
	1				Indian ricegrass	10
					big sagebrush	
					blue grama	10
					bottlebrush squirreltail	
	I				galleta	5
	I				oneseed juniper	
	İ	j		İ	winterfat	
		j		İ	broom snakeweed	3
		j		İ	muttongrass	3
	j	j		İ	other annual forbs	3
	i	j		İ	miscellaneous perennial forbs	
		i		i	rabbitbrush	
	i	i		i	spineless horsebrush	
				į	twoneedle pinyon	
244:					 	
Buckle	Loamy	1,500	1,000	500	western wheatgrass	20
	i -	j		İ	Indian ricegrass	10
	i	j		İ	big sagebrush	
	i	i		i	blue grama	10
	i	i			bottlebrush squirreltail	
	i	i		i	galleta	
		i		i	oneseed juniper	
	i	i		i	winterfat	
	i	i			broom snakeweed	
		i			muttongrass	
	i	i		i	other annual forbs	
		i		i	miscellaneous perennial forbs	1
	i	i		i	rabbitbrush	
	i	i		i	spineless horsebrush	
		i		İ	twoneedle pinyon	
		į		į		į
245: Buckle	Loamy	1,500	1,000	500	  western wheatgrass	20
		i		i	Indian ricegrass	
	i	i		i	big sagebrush	
	i	i			blue grama	
	i	i			bottlebrush squirreltail	
	i	i		i	galleta	
	i	i		i	oneseed juniper	
	i	i		i	winterfat	l 5
	i	i			broom snakeweed	
	İ	i		i	muttongrass	3
	i	i		i	other annual forbs	l 3
	i	i			miscellaneous perennial forbs	
					rabbitbrush	
					spineless horsebrush	
			 	I.	twoneedle pinyon	
		1		1	rwomeeate binivon	1 Z

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	y-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal year	Unfavorable   year	 	   
		Lb/acre	Lb/acre	Lb/acre	   	   Pct 
245: Gapmesa	Loamy	1,500	1,000	500	  blue grama	20
					western wheatgrass	
					Indian ricegrass	10
					big sagebrush	
	I				galleta	
				1	bottlebrush squirreltail	1
	ļ	!			fourwing saltbush	
	!				needle and thread	
					oneseed juniper	5
					sand dropseed	
					spineless horsebrush	
					rabbitbrush	
	 				twoneedle pinyon	1
Barboncito	Loamy	700	500	275	blue grama	
	I				western wheatgrass	
					Indian ricegrass	
	ļ				big sagebrush	
	ļ				galleta	
	ļ	!			bottlebrush squirreltail	
					fourwing saltbush	
					needle and thread	
					oneseed juniper	•
					sand dropseed	
					spineless horsebrush  rabbitbrush	
	 				twoneedle pinyon	1 1
250:	 			į	   	  -
Hospah	Shale Hills	660	425	250	alkali sacaton	15
	İ	j		İ	galleta	15
	İ	j		İ	Indian ricegrass	5
	1				blue grama	5
					bottlebrush squirreltail	5
					fourwing saltbush	5
				1	little bluestem	
	ļ	!			needle and thread	
	!				sideoats grama	
					western wheatgrass	
					mound saltbush	2
	I				shadscale saltbush  Bigelow sagebrush	1
	-			I I	oneseed juniper	
					winterfat	
	į	į į		İ		İ
Skyvillage	Shallow Sandstone	700	475		Bigelow sagebrush	
					blue grama	
				Į.	fourwing saltbush	
				1	galleta	
					Indian ricegrass	
					New Mexico Feathergrass   little bluestem	
	1			1	shadscale saltbush	
	1			1	shadscale saltbush  sideoats grama	
	I I				sideoats grama	
	1			1	cliffrose	
					Mormon tea	
				İ	oneseed juniper	l 3
	1			i i	twoneedle pinyon	1 2

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total d	ry-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name		Favorable	Normal	Unfavorable	-	
		year	year 	year	 	
		Lb/acre	Lb/acre	Lb/acre		Pct
250:						
Rock outcrop	-				 	
Eagleye	 - Clayey	660	475	250	  western wheatgrass	25
					alkali sacaton	15
					big sagebrush	
					blue grama	5
					bottlebrush squirreltail	5
					fourwing saltbush	
					galleta	5
					other annual forbs	5
	I				miscellaneous perennial forbs	5
	İ	ĺ	ĺ	İ	Indian ricegrass	3
	İ	j	İ	İ	rabbitbrush	3
	į	į		į	winterfat	3
Atchee	 - Clavev	   700	l 500	l 275	  alkali sacaton	l l 20
	i	i	İ		western wheatgrass	20
	i	i	İ	i	galleta	
	i	i	İ	i	Indian ricegrass	
	i	i	İ	i	black sagebrush	
	i	i	İ		blue grama	
	i	İ	l I		bottlebrush squirreltail	
	i	İ	l I		broom snakeweed	
	1	i	! 		oneseed juniper	
	1	i	! 	i	threeawn	5
	i	i	! 		twoneedle pinyon	
	i	i	! 		mat muhly	
			 	i	spike muhly	2
	į	į	İ	į		
Rock outcrop	-  		 		 	
270:		i	İ	İ		
Alesna	- Foothills	750	500	375	blue grama	20
	Ţ				galleta	
	Ţ				sideoats grama	10
					alkali sacaton	
					black grama	
					bottlebrush squirreltail	
	Ţ				fourwing saltbush	
	Ţ				little bluestem	5
	1				needle and thread	
	1				winterfat	
					common wolfstail	
					oneseed juniper	
					twoneedle pinyon	2
			 		yucca	2
Rock outcrop	 -				 	 
-	İ	i	i i	i		

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	y-weight pr	oduction	   Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal year	Unfavorable   year		<u> </u> 
		Lb/acre	Lb/acre	Lb/acre		Pct
275:						
Eldado	Gravelly	900	600	350	blue grama	15
					sideoats grama	
				 	Indian ricegrass   black grama	
				 	bottlebrush squirreltail	
	İ	i		İ	little bluestem	
					needle and thread	
					western wheatgrass	
		 		l I	winterfat   fourwing saltbush	
					galleta	
	İ	i		İ	oneseed juniper	
					rabbitbrush	
					sand dropseed	
					twoneedle pinyon	1
280:	Loamy Upland (sodic) 5-8"	   500	400	300	  alkali sacaton	   25
Tizabaciic	P.z.	500	400	300	mound saltbush	1
	İ	i		İ	galleta	
					Indian ricegrass	
					blue grama	
				1	other annual forbs miscellaneous perennial forbs	
				I I	sand dropseed	1
					shadscale saltbush	
290:						
Rock outcrop					 	
Westmion	- Foothills	750	500	375	  Indian ricegrass	5
					Mormon tea	
				1	blue grama   cliffrose	
				I I	fourwing saltbush	
		i		İ	galleta	
					little bluestem	
					mountain mahogany	
				I I	sideoats grama  winterfat	
		i			oneseed juniper	
		į		į	twoneedle pinyon	1
Skyvillage	  Shallow Sandstone	   750	500	275	  Bigelow sagebrush	
					blue grama	
					fourwing saltbush   galleta	
					galleta  Indian ricegrass	
					New Mexico Feathergrass	
	j	İ		İ	little bluestem	
	ļ	İ			shadscale saltbush	
					sideoats grama	
					winterfat   cliffrose	
					Mormon tea	
					oneseed juniper	
	1	i		1	twoneedle pinyon	

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	oduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year		   
		Lb/acre	Lb/acre	Lb/acre		   Pct
291:						
Rock outcrop	===					
Eagleye	  Clavev	l   800	l 650	l 500	  western wheatgrass	l l 25
32					alkali sacaton	15
		j	İ	İ	big sagebrush	5
					blue grama	5
					bottlebrush squirreltail	5
					fourwing saltbush	5
			 		galleta   other annual forbs	5 l 5
			 		miscellaneous perennial forbs	J 5
			 		Indian ricegrass	l 3
				İ	rabbitbrush	3
		į	İ	į	winterfat	3
Atchee	  Clayey	l   800	l 650	500	  alkali sacaton	l   20
					western wheatgrass	20
		j	İ	İ	galleta	10
					Indian ricegrass	5
					blue grama	5
					bottlebrush squirreltail	5
					broom snakeweed	5
					oneseed juniper	5
			l I	l I	threeawn	5 l 5
			 	1	winterfat	l 5
			 		mat muhly	l 3
					spike muhly	2
05:			 			 
Celavar	Savannah	875	500	300	blue grama	20
					western wheatgrass	15
			 		Indian ricegrass   needle and thread	5 l 5
			 		oneseed juniper	) 5   5
			 		other annual forbs	l 5
			! 		miscellaneous perennial forbs	5
		j	İ	İ	sand dropseed	5
		į		İ	twoneedle pinyon	5
					muttongrass	3
				!	rabbitbrush	3
					winterfat	3
					Bigelow sagebrush	2
			 		bottlebrush squirreltail spineless horsebrush	2   2
Atarque	Shallow Sandstone	700	   500	275	  Indian ricegrass	   10
-		į			New Mexico Feathergrass	
		į		İ	blue grama	10
					little bluestem	10
		ļ		ļ.	sideoats grama	
		ļ			Bigelow sagebrush	
		Į.			fourwing saltbush	
i			 		galleta	
		1		1	other annual forbs	
		i	I	1	Imiggellaneous poroprist fort-	=
			 		miscellaneous perennial forbs	
		 	   	   	rabbitbrush	3
			     	i I		3

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	Composition
and soil name		Favorable year	Normal year	Unfavorable   year		
		_    Lb/acre	Lb/acre	   Lb/acre		Pct
		į		į	İ	į
308: Fikel	 - Clayey	1,200	800	600	  alkali sacaton	20
rikei		1,200	000	000	western wheatgrass	
	İ	i		İ	galleta	
	İ	j		j	Indian ricegrass	5
					blue grama	
		Ţ			bottlebrush squirreltail	
					broom snakeweed	
		l I		1	fourwing saltbush   threeawn	•
		}			winterfat	
		i		İ	mat muhly	1
		j		İ	spike muhly	
		ļ		İ	ļ.	!
Venzuni	- Clayey	1,200	800	600	alkali sacaton	
					western wheatgrass galleta	
		-		}	Indian ricegrass	•
		i		İ	blue grama	
		i			bottlebrush squirreltail	
	İ	i			broom snakeweed	
		į		Ì	fourwing saltbush	
					threeawn	
		Ţ			turpentine bush	
					winterfat	
				1	mat muhly   spike muhly	
					spike muliy	2
310: Parkelei	Loamy	1,100	800	   600	  western wheatgrass	20
		i		İ	Indian ricegrass	
	İ	j		Ì	big sagebrush	•
					blue grama	10
		Ţ			bottlebrush squirreltail	
		ļ			galleta	
					oneseed juniper	
		-		}	broom snakeweed	
		i		İ	muttongrass	
	İ	i		İ	other annual forbs	
	İ	j		Ì	miscellaneous perennial forbs	3
					rabbitbrush	3
		Ţ			spineless horsebrush	•
					twoneedle pinyon	2
312:				İ		İ
Bluewater	Meadow	3,000	2,000	1,500	western wheatgrass	
				1	rush	
		l I		I	sedge   California brome	1
				1	bottlebrush squirreltail	•
			 	İ	slender wheatgrass	
		i		i	willow	
	İ	į		į	clover	1
					other annual forbs	3
		1		J	miscellaneous perennial forbs	3
						1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	oduction	Characteristic vegetation 	   Composition
and soil name		Favorable   year	Normal year	Unfavorable   year		 
		Lb/acre	Lb/acre	Lb/acre		Pct
15:						
Fragua	Sandy Slopes	1,800	1,200	600	Indian ricegrass	
					blue grama	
					western wheatgrass	
	ļ				galleta	
	!				needle and thread	
	ļ				other annual forbs	
					miscellaneous perennial forbs	
		-			rabbitbrush   sand dropseed	
		l I		l I	sand dropseed  spineless horsebrush	
					spineress norsebrush   threeawn	
					oneseed juniper	1
		-			ring muhly	
					twoneedle pinyon	
L6: Royosa	- Sandy Plains	1,100	800	500	  blue grama	20
					Indian ricegrass	
				İ	big sagebrush	
	i	i		İ	oneseed juniper	
	i	į		İ	sand sagebrush	10
	i	į		İ	little bluestem	
	İ	j		İ	other annual forbs	5
	İ	ĺ		İ	miscellaneous perennial forbs	5
					rabbitbrush	
					twoneedle pinyon	5
					antelope bitterbrush	
					cliffrose	1
					spineless horsebrush	
25:						
Venzuni	Clayey	3,000	2,000	1,500	western wheatgrass	
		ļ			alkali sacaton   big sagebrush	
		l I		l I	blue grama	
					bottlebrush squirreltail	
		-			fourwing saltbush	
					galleta	
	i	İ		İ	other annual forbs	
	İ	ì		i	miscellaneous perennial forbs	'
	i	i		İ	Indian ricegrass	'
	i	i		i	rabbitbrush	3
		į			winterfat	3
5:		I I			[ 	
/enadito	Clayey Bottomland	4,000	2,500	1,250	western wheatgrass	
					alkali sacaton	
				!	fourwing saltbush	10
	!	- !		<u> </u>	galleta	
	!	- !		<u> </u>	blue grama	
	!	1			spike muhly	5
	ļ				mat muhly	
				1	other annual forbs	,
				1	miscellaneous perennial forbs  broom snakeweed	
	I			1	broom snakeweed  rabbitbrush	
	1			1	Tanoitoinsii	1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	y-weight pr	roduction	Characteristic vegetation	   Composition
and soil name	 	Favorable   year	Normal year	Unfavorable   year	1	
		_		.i		İ
		Lb/acre	Lb/acre	Lb/acre	 	Pct 
336: Nuffel	  Bottomland	4,500	3,000	1,250	  alkali sacaton	   30
	1	, , , , ,	.,		western wheatgrass	
	i	i		i	fourwing saltbush	
	İ	i i		İ	blue grama	5
	İ	i i		İ	galleta	5
	İ	j i		İ	miscellaneous perennial forbs	5
	İ	j i		İ	spike muhly	5
	İ	j i		İ	mat muhly	
	İ	j i		İ	other annual forbs	3
	İ	j i		İ	sand dropseed	3
		İ		İ	spineless horsebrush	
Venadito	Clayey Bottomland	4,000	3,000	1,250	  western wheatgrass	
					alkali sacaton	
					fourwing saltbush	
	I				galleta	
	I				blue grama	
					spike muhly	
					mat muhly	
					other annual forbs	
	ļ				miscellaneous perennial forbs	•
	ļ				broom snakeweed	1
					rabbitbrush  	1 
338:	Clavov	   600	400	150	  western wheatgrass	   25
Zyme	Ciayey	1 000	400	1 130	alkali sacaton	
				1	big sagebrush	
	1				blue grama	•
					bottlebrush squirreltail	1
					fourwing saltbush	
		i		i	galleta	1
	İ	i		ì	other annual forbs	
	i	i		i	miscellaneous perennial forbs	
	i	i		i	Indian ricegrass	
	i	i		i	rabbitbrush	3
		į į		į	winterfat	3
Lockerby	  Clayey	600	400	150	  alkali sacaton	   20
	1				western wheatgrass	20
					galleta	10
					Indian ricegrass	5
					blue grama	5
	I				bottlebrush squirreltail	
	I				broom snakeweed	
	I				fourwing saltbush	
	I				threeawn	1
	I	i i			winterfat	1
	I				mat muhly	3
	I				spike muhly	2

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total d	ry-weight pr	oduction	Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal   year	Unfavorable   year	e    	 
		   Lb/acre	Lb/acre	Lb/acre		Pct
351:						
Rock outcrop			 		 	 
Vessilla	Shallow Savannah	500	l 300	200	  Gambel oak	 
		i		İ	antelope bitterbrush	!
	İ	İ	ĺ	İ	banana yucca	
	I				big sagebrush	
	ļ				blue grama	
	ļ				broom snakeweed   buckwheat	
			 	I.	little bluestem	!
	ł		 		mountain mahogany	!
	i		 		muttongrass	
	i	İ	İ	İ	oneseed juniper	!
	İ	j	İ	İ	other annual forbs	
	1				miscellaneous perennial forbs	!
	ļ.			!	prairie junegrass	
			 		sideoats grama	 
352: Zia	  Sandy	1,200	900	600	  blue grama	   25
	i	i	İ	İ	western wheatgrass	15
		j		İ	Indian ricegrass	
	1				sand dropseed	10
					fourwing saltbush	
					other annual forbs	
	ļ				miscellaneous perennial forbs	
	ļ				spike dropseed	•
			 	1	winterfat   galleta	
	ł		l I		ring muhly	
			 		oneseed juniper	
	i		 		rabbitbrush	
		i		i	sand sagebrush	
		İ	İ	İ	sand sagebrush	
		İ			spineless horsebrush	1
353:			 			 
Mido	Deep Sand	900	600	400	Indian ricegrass	
					blue grama	
	ł	l I	l I	l I	antelope bitterbrush   broom snakeweed	
			 		fourwing saltbush	
	i		 		sand dropseed	5
					sandhill muhly	5
354:						
Knifehill	Meadow	3,000	2,200	1,500	western wheatgrass rush	
			 	1	rush  sedge	
			 	1	slender wheatgrass	!
	i		! 		California brome	
	i	i		i	muttongrass	5
	į	i	İ		willow	
	1				other annual forbs	
	I				miscellaneous perennial forbs	3

 ${\tt Table \ 6.--Productivity \ and \ Characteristic \ Plant \ Communities--Continued}$ 

Map symbol	Ecological site	Total dr	y-weight pr	oduction	Characteristic vegetation	   Composition
and soil name		Favorable     year	Normal year	Unfavorable   year	- 1	
		   Lb/acre	Lb/acre	Lb/acre		   Pct
355:					 	 
Rizno	Shallow Sandstone	700	500	275	Indian ricegrass	10
į		j		İ	New Mexico Feathergrass	10
					blue grama	10
					little bluestem	10
					sideoats grama	10
					Bigelow sagebrush	5
					fourwing saltbush	
					galleta	5
					miscellaneous perennial forbs	5
					sand dropseed	5
					antelope bitterbrush	
					cliffrose	2
					Mormon tea	2
					oneseed juniper	
Tekapo  {	Shale Hills	660	400	250	  alkali sacaton	15
	İ	j		İ	galleta	15
	İ	j		İ	Indian ricegrass	5
	İ	j		İ	blue grama	
	İ	j		İ	bottlebrush squirreltail	5
	İ	j		İ	fourwing saltbush	5
					little bluestem	5
					needle and thread	
					sideoats grama	5
					western wheatgrass	
					mound saltbush	2
					shadscale saltbush	2
					Bigelow sagebrush	1
					oneseed juniper	1
					winterfat	1
Rock outcrop	   				   	   
357: Heshotauthla	  Salty Bottomland	2,500	1,500	800	  alkali sacaton	30
	İ	i i		İ	western wheatgrass	20
	İ	i i		İ	bottlebrush squirreltail	10
	İ	i i		İ	fourwing saltbush	
	İ	i i		İ	galleta	
	İ	j		İ	big sagebrush	
	İ	į i		i	blue grama	5
	İ	j		İ	greasewood	
	İ	į i		i	inland saltgrass	
	İ	j		İ	other annual forbs	
	İ	į i		i	miscellaneous perennial forbs	
	İ	j		İ	mat muhly	
	İ	i i		İ	İ	İ

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name		Favorable year	Normal   year	Unfavorable   year		
		 Lb/acre	Lb/acre	Lb/acre		Pct
360:			 			 
Hosta	I Camy	1,100	l 800	1 600	  western wheatgrass	l 20
nosca	Locality	1 1,100	l 000	1 000	Indian ricegrass	•
	I I		! 		big sagebrush	!
	I I		! 		blue grama	
	I I		 		bottlebrush squirreltail	
	I I		 		galleta	
	i I		l I		oneseed juniper	
			! 		winterfat	
			! 	II.	broom snakeweed	1
	i		i I		muttongrass	
	i		i I		other annual forbs	
	İ	<u> </u>		•	miscellaneous perennial forbs	•
	İ	i			rabbitbrush	
	i	i	İ	i	spineless horsebrush	
	į		İ	į	twoneedle pinyon	
Concho	  Clavev	1,200	1,000	   800	  western wheatgrass	   25
		,			alkali sacaton	
	i	i	İ		big sagebrush	
	i	i	İ		blue grama	
	i	i	İ		bottlebrush squirreltail	
	İ	i	İ		fourwing saltbush	
	İ	i	İ		galleta	
	İ	j	İ	İ	other annual forbs	5
	İ	j	İ	İ	miscellaneous perennial forbs	5
	İ	j	İ	İ	Indian ricegrass	3
	İ	į	ĺ	İ	rabbitbrush	3
				į	winterfat	3
361:			 			 
Monpark	Clayey	1,200	1,000	800	western wheatgrass	25
				1	alkali sacaton	1
					blue grama	
					galleta	!
					Indian ricegrass	!
		Ţ			fourwing saltbush	
					winterfat	
		Ţ			other annual forbs	
		Ţ			miscellaneous perennial forbs	
		Ţ		•	bottlebrush squirreltail	•
	ļ.	Ţ		1	rabbitbrush	1
		Ţ			broom snakeweed	1
		I		1		

 ${\tt Table \ 6.--Productivity \ and \ Characteristic \ Plant \ Communities--Continued}$ 

Map symbol	Ecological site	Total dr	ry-weight pr	oduction	Characteristic vegetation	   Composition
and soil name		Favorable year	Normal   year	Unfavorable   year		
		Lb/acre	Lb/acre	Lb/acre	   	Pct
365: Vessilla	  Shallow Savannah	700	   450	   275	  Bigelow sagebrush	
					blue grama	
	 		 		fourwing saltbush   Indian ricegrass	
		i			New Mexico Feathergrass	
		i		İ	galleta	
	İ	j	İ	İ	little bluestem	5
					other annual forbs	5
				[	miscellaneous perennial forbs	
					sideoats grama	
			l I		winterfat   cliffrose	
	 		 	I I	Mormon tea	
	I 	i	 	İ	oneseed juniper	
		i		İ	twoneedle pinyon	
		i i		İ		İ
Rock outcrop	 		 			 
366: Bosonoak	Loamy	1,100	   850	   600	  western wheatgrass	   20
		i i		İ	Indian ricegrass	
					big sagebrush	
					blue grama	
	!				galleta	
					winterfat	
	1		 	1	rubber rabbitbrush   oneseed juniper	
	 		   		twoneedle pinyon	2
375:	 	     875	     500		    blue grama	     20
Todest		6/5	] 500	] 300	western wheatgrass	
	 	i			Indian ricegrass	
	i I	i		İ	needle and thread	
	İ	i		İ	oneseed juniper	
		j		İ	other annual forbs	5
				[	miscellaneous perennial forbs	
		!			sand dropseed	
			l I		twoneedle pinyon   muttongrass	
	 		 	I I	rabbitbrush	
	I 	i	 	İ	winterfat	3
	İ	i		İ	Bigelow sagebrush	
	İ	i i	İ	İ	bottlebrush squirreltail	
	 	İ	 	İ	spineless horsebrush	2
Shadilto	Shallow	850	500	300	New Mexico Feathergrass	
	j	j		İ	blue grama	20
					sideoats grama	15
	[	[		!	Indian ricegrass	'
					bottlebrush squirreltail	
					little bluestem	
			 		western wheatgrass	
	 		 	1	galleta	
	 		 	1	sand dropseed	
	 		 	1	oneseed juniper	
	I I		l I	1	twoneedle pinyon	
					Twoneedle pinvon	3

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total di	ry-weight pr	oduction	   Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal year	Unfavorable   year	-	
		Lb/acre	Lb/acre	Lb/acre		Pct
376: Todest	  Savannah   	   875   	500		  blue grama  western wheatgrass  Indian ricegrass	15   5
				j 	needle and thread oneseed juniper other annual forbs miscellaneous perennial forbs sand dropseed	5   5   5
					twoneedle pinyon	5   3   3
	 			İ	Bigelow sagebrush   bottlebrush squirreltail   spineless horsebrush	2
380: Berryhill	  Clayey 	1,200	1,000	İ	  western wheatgrass   alkali sacaton   blue grama	
	 			 	galleta  Indian ricegrass  fourwing saltbush	10 5 5
	 		     		winterfat other annual forbs miscellaneous perennial forbs bottlebrush squirreltail rabbitbrush	4
Casamero	Clavev	1,200	1,000	j 	broom snakeweed	1
Casaller	Crayey		1,000	 	western wheatgrass   alkali sacaton   blue grama   galleta   galleta   Indian ricegrass   fourwing saltbush   winterfat   other annual forbs   bottlebrush squirreltail   rabbitbrush   rabbitbrush   sacaton   sacato	20 10 10 5 5 1 5 1 4 4
390:					broom snakeweed	1
Banquito	Limy	950	600	 	western wheatgrass- blue grama- needle and thread- winterfat- Indian ricegrass- bottlebrush squirreltail- other annual forbs- miscellaneous perennial forbs- fourwing saltbush- twoneedle pinyon- broom snakeweed- oneseed juniper- rabbitbrush- spineless horsebrush-	10 10 5 5 5 5 5 1 5 1 3 2 2 1 1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name		Favorable     year	Normal year	Unfavorable   year	•	   
	   	   Lb/acre	Lb/acre	Lb/acre	<del></del>   	   Pct 
406: Polich	     Meadow	4,500	3,000	2.000	    redtop	     25
		-,	,,,,,		sedge	
	j	i i		İ	Rocky Mountain iris	
					bottlebrush squirreltail	
					muttongrass	
					plantain	
				ļ	Kentucky bluegrass	
					rush	•
					miscellaneous perennial forbs	
				I	western wheatgrass   clover	
					other annual forbs	1
	I I			İ	smooth brome	1
		i i		İ	western yarrow	
411:						
Robolata	  Mountain Grassland	1,400	1,000	l 600	  Arizona fescue	1 15
		'	,	i	mountain muhly	
	i	i i		i	blue grama	5
	İ	j i		İ	buckwheat	5
					muttongrass	5
					western wheatgrass	
					pingue hymenoxys	
				ļ	silvery lupine	'
	!			ļ	spineless horsebrush	
					whorled plantain	
					Gambel oak   broom snakeweed	,
413: Morclay	  Clayey	1,200	1,000	800	  western wheatgrass	25
-		i i		i	needle and thread	
	į	i i		İ	Indian ricegrass	5
					blue grama	5
					bottlebrush squirreltail	
				ļ	galleta	,
					other annual forbs	1
					miscellaneous perennial forbs	•
					pingue hymenoxys rabbitbrush	•
420:					 	 
Seco	Mountain Grassland	1,400	1000	600	  Arizona fescue	
		i i			mountain muhly	
		į l		Ţ	blue grama	
		į i		ļ	buckwheat	
		. [			muttongrass	1
				Į.	western wheatgrass	
				-	pingue hymenoxys	2
	1	1		I	silvery lupine	
	1	1		I.	spineless horsebrush  whorled plantain	
	1			-	Gambel oak	
		<u> </u>		İ	broom snakeweed	
		-		1	1	1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total di	ry-weight pr	roduction	Characteristic vegetation	   Composition
and soil name	 	Favorable year	Normal year	Unfavorable   year		 
		   Lb/acre	Lb/acre	Lb/acre		Pct
425:						
Montillo	Shallow	1,000	700	400	Arizona fescue	
					mountain muhly	•
	l				blue grama	
	l				buckwheat	
	l I	ļ	l I		prairie junegrass   bottlebrush squirreltail	•
					spineless horsebrush	1
			 		broom snakeweed	
Canoneros	Shallow	1,000	   700	400	  Arizona fescue	   20
		i		i	mountain muhly	
		i		i	blue grama	
		i		i	buckwheat	
		j	İ	i	prairie junegrass	5
		İ		İ	bottlebrush squirreltail	
					spineless horsebrush	3
	 		 		broom snakeweed	2
430:				100		
Montillo	Snallow	1,000	700	400	Arizona fescue   Gambel oak	
					mountain muhly	
		1	 		blue grama	
		1	 		bottlebrush squirreltail	
		ł	 		prairie junegrass	1
		i			broom snakeweed	
		ì	 		muttongrass	
		ì		i	buckwheat	!
		į		į	whorled plantain	2
435:	 		 		 	 
Tsoodzil	Cinder Hills	1,400	1,000	600	Gambel oak	30
		ļ			Arizona fescue	
		ļ			mountain muhly	
		ļ			blue grama	!
		!			bottlebrush squirreltail	
					muttongrass	
			 		prairie junegrass   buckwheat	!
Amcec	  Cinder Hills	1,400	1,000	600	  Arizona fescue	   25
		1		i	mountain muhly	20
		i		i	Gambel oak	!
		j	İ	i	blue grama	5
		Ì		İ	bottlebrush squirreltail	5
				[	muttongrass	5
	 		 		prairie junegrass   buckwheat	
440						
440: Chivato	  Playa	500	   350	200	  western wheatgrass	   80
					curly dock	
					pingue hymenoxys	1
					I	

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	Ecological site	Total dr	y-weight pr	roduction	   Characteristic vegetation	   Composition
and soil name		Favorable   year	Normal year	Unfavorable   year		 
		Lb/acre	Lb/acre	Lb/acre		Pct
525: Silcat	    Clayey	1,200	900	     600	    western wheatgrass	     25
				İ	alkali sacaton	5   5   5
					galleta   other annual forbs   miscellaneous perennial forbs  Indian ricegrass  rabbitbrush	5   5   3
					winterfat	,
Galzuni	Clayey	1,200	900	     	western wheatgrass	15 5 5 5 5 5 5 5 5 5 7 5
560: Flugle	   Loamy         	1,500	1,000	 	blue grama	20 8 8 5 5 5 5 5 5 5 5 2 1
560: Teczuni	   Loamy 	1,500	1,000	                 	blue grama	10 10 5 5 5 5 5 5 3 1 1 1 1

Table 6.--Productivity and Characteristic Plant Communities--Continued

Ecological site	Favorable year Lib/acre 900	Normal year Lb/acre	[ ]	Characteristic vegetation	Pct  15 10
andy Slopes			300	galleta	15
Sandy Slopes	900	600	[ ]	galleta	
iandy Slopes	900	600	[ ]	galleta	
				sand dronseed	
					10
				Indian ricegrass	3
				antelope bitterbrush	3
				cliffrose	3
				muttongrass	3
			•	oneseed juniper	3
				other annual forbs	3
				miscellaneous perennial forbs	3
				rabbitbrush	3
				ring muhly	3
				sideoats grama	3
				twoneedle pinyon	3
				yucca	1
			ļ		
ravelly	800	500			15
				black grama	10
				galleta	10
				Indian ricegrass	5
				New Mexico Feathergrass	5
				antelope bitterbrush	5
	j j				5
	j j		İ	muttongrass	5
	j j		İ	other annual forbs	5
	j j		İ	miscellaneous perennial forbs	5
	i i				3
	i i				2
	i i		į		2
	į į		į i	twoneedle pinyon	1
	1 100	050		l and a second	20
loany	1,100	850	600		20
	!!!				10
					10
					10
	ļ .		1		5
					5
					5
			1		5
			1		
	j l				
	į l				
	į l		1	-	3
					3
				spineless horsebrush	2
				twoneedle pinyon	2
	ravelly			ravelly 800 500 300	twoneedle pinyon

Table 6.--Productivity and Characteristic Plant Communities--Continued

Map symbol	   Ecological site	Total dr	y-weight pr	oduction	Characteristic vegetation	Composition
and soil name	İ	Favorable	Normal	Unfavorable		-
		year	year	year		
		Lb/acre	Lb/acre	Lb/acre		Pct
575:					<u> </u>	
Pescado	Malpais	500	300	200	  big sagebrush	15
					blue grama	10
					galleta	10
					western wheatgrass	10
					Indian ricegrass	5
					bottlebrush squirreltail	5
	ĺ	į į		İ	little bluestem	5
	ĺ	į į		İ	muttongrass	5
	ĺ	į į		İ	needle and thread	5
	ĺ	į į		İ	sideoats grama	5
					winterfat	5
	ĺ	į į		İ	oneseed juniper	3
	ĺ	į į		İ	other annual forbs	3
	ĺ	į į		İ	miscellaneous perennial forbs	3
		į i			twoneedle pinyon	3
		ı i				
		l				

Table 7.--Forest Productivity

	Potential produ				
Map symbol and soil name	!			Trees to manage	
			cu ft/ac		
255: Farview	    oneseed juniper  twoneedle pinyon			oneseed juniper, twoneedle pinyon	
300:					
	Rocky Mountain   juniper			Rocky Mountain	
	ponderosa pine  twoneedle pinyon			pine, twoneedle pinyon	
215.					
315: Flugle	  oneseed juniper		0	oneseed juniper,	
	twoneedle pinyon	91	14	twoneedle pinyon	
Fragua	  oneseed juniper	 	0	oneseed juniper,	
	twoneedle pinyon	58	6	twoneedle pinyon	
317:	 				
	Rocky Mountain   juniper			Rocky Mountain juniper, oneseed	
	oneseed juniper twoneedle pinyon		0	juniper, twoneedle pinyon	
Evpark	oneseed juniper	 	l 0	oneseed juniper,	
	twoneedle pinyon			twoneedle pinyon	
	  Rocky Mountain   juniper	   		Rocky Mountain juniper, oneseed	
	oneseed juniper twoneedle pinyon			juniper, twoneedle pinyon	
				F7	
320: Parkelei	oneseed juniper	 	l l 0	oneseed juniper,	
	twoneedle pinyon			twoneedle pinyon	
Fraguni	  oneseed juniper  twoneedle pinyon			oneseed juniper, twoneedle pinyon	
332:					
	oneseed juniper			oneseed juniper,	
	twoneedle pinyon	121 	29 	twoneedle pinyon	
Arabrab	Utah juniper   twoneedle pinyon	90	0 29	Utah juniper, twoneedle pinyon	
345:					
Tuces	oneseed juniper twoneedle pinyon	   90 	0   14 	oneseed juniper,   twoneedle pinyon	

Table 7.--Forest Productivity--Continued

	ty	   		
Map symbol and soil name	Common trees	index	Volume of wood fiber	:
			cu ft/ac	
350:		 	 	 
Toldohn	Gambel oak			Gambel oak, Rocky
	Rocky Mountain   juniper		0	Mountain juniper,
	oneseed juniper		I I 0	oneseed juniper, twoneedle pinyon
	twoneedle pinyon		!	
Vessilla	Gambel oak		0	  Gambel oak, Rocky
	Rocky Mountain		0	Mountain juniper,
	juniper  oneseed juniper		   0	oneseed juniper, twoneedle pinyon
	twoneedle pinyon		!	twoneedie pinyon
365:	į	į	į	 
Vessilla	  oneseed juniper	 	I I 0	oneseed juniper,
	twoneedle pinyon		14	twoneedle pinyon
367:		 	 	
Chunkmonk	Rocky Mountain	j	0	Rocky Mountain
	juniper			juniper, oneseed
	oneseed juniper twoneedle pinyon	:	0   29	juniper, twoneedle pinyon
200		į	İ	
368: Simitarg	  Rocky Mountain	 	l I 0	  Rocky Mountain
~	juniper		İ	juniper, oneseed
	oneseed juniper		:	juniper, twoneedle
	twoneedle pinyon	110 	18 	pinyon 
Celavar	Rocky Mountain		0	  Rocky Mountain
	juniper			juniper, oneseed
	oneseed juniper twoneedle pinyon		0   10	juniper, twoneedle pinyon
385:				
Mcorreon	Rocky Mountain   juniper		0 	Rocky Mountain   juniper, oneseed
	oneseed juniper		0	juniper, twoneedle
	twoneedle pinyon	42	5	pinyon
395:		 	 	 
Cabezon	Rocky Mountain		0	Rocky Mountain
	juniper			juniper, oneseed
	oneseed juniper twoneedle pinyon		0   5	juniper, twoneedle pinyon
V.	į	į	į	
Mcorreon	Rocky Mountain   juniper		0 	Rocky Mountain   juniper, oneseed
	oneseed juniper		0	juniper, twoneedle
	twoneedle pinyon		4	pinyon

Table 7.--Forest Productivity--Continued

	Potential prod	   			
Map symbol and soil name	Common trees	Site   Volume     index of wood     fiber		Trees to manage	
		 	cu ft/ac		
400:			 	l	
	  Rocky Mountain	 	l l 0	  Rocky Mountain	
	juniper		İ	juniper, alligator	
	alligator juniper	j	0	juniper, ponderosa	
	ponderosa pine	58	43	pine, twoneedle	
	twoneedle pinyon		0	pinyon	
Stozuni	  Rocky Mountain	 	l l 0	  Rocky Mountain	
	juniper	İ	:	juniper, alligator	
	alligator juniper	j	0	juniper, ponderosa	
	ponderosa pine	50	43	pine, twoneedle	
	twoneedle pinyon		0	pinyon	
403:	 	 	 		
Valnor	Gambel oak	i	0	Gambel oak, Rocky	
	Rocky Mountain	j	0	Mountain juniper,	
	juniper			alligator juniper,	
	alligator juniper			ponderosa pine,	
	ponderosa pine	1	:	twoneedle pinyon	
	twoneedle pinyon	 	0 	]	
Techado	Gambel oak	 	0	  Gambel oak, Rocky	
	Rocky Mountain		0	Mountain juniper,	
	juniper			alligator juniper,	
	alligator juniper		0	ponderosa pine,	
	ponderosa pine	1	:	twoneedle pinyon	
404:	twoneedle pinyon		0	 	
Techado	  Douglas fir	l I	l l 0	  Douglas fir, Gambel	
1001200	Gambel oak		:	oak, Rocky	
	!		0	Mountain juniper,	
	juniper	İ	j	alligator juniper,	
	alligator juniper			ponderosa pine,	
	ponderosa pine			twoneedle pinyon	
	twoneedle pinyon		0	 	
Stozuni	  Douglas fir	 	l   0	  Douglas fir, Gambel	
	Gambel oak	i	0	oak, Rocky	
	Rocky Mountain		0	Mountain juniper,	
	juniper			alligator juniper,	
	alligator juniper		0	ponderosa pine,	
	ponderosa pine		29   0	twoneedle pinyon	
	twoneedle pinyon		"	[ 	
405:	į	į	į		
Fortwingate	Gambel oak		:	Gambel oak, Rocky	
	Rocky Mountain		0	Mountain juniper,	
	juniper	1 40	l 20	ponderosa pine,	
	ponderosa pine  twoneedle pinyon		29   0	twoneedle pinyon	

Table 7.--Forest Productivity--Continued

	Potential produ	 		
Map symbol and soil name	Common trees	1	   Volume  of wood   fiber	   Trees to manage   
		į	cu ft/ac	
405:	 	 	 	 
Owlrock	Gambel oak	 	0	Gambel oak, Rocky
	Rocky Mountain	i	0	Mountain juniper,
	juniper		[	ponderosa pine,
	ponderosa pine			twoneedle pinyon
	twoneedle pinyon	 	0 	 
407:		İ		
Cinnadale	Gambel oak		:	Gambel oak, Rocky
	Rocky Mountain		0	Mountain juniper,
	juniper  ponderosa pine	1	   57	ponderosa pine, twoneedle pinyon
	twoneedle pinyon	1	0	ewonecare prinyon
		İ	į	İ
Heckly	Gambel oak		1	Gambel oak, Rocky
	Rocky Mountain   juniper		0	Mountain juniper,
	ponderosa pine		43	ponderosa pine, twoneedle pinyon
	twoneedle pinyon		0	
	İ	İ	İ	İ
408:	I Combatana			 
Mirabal	Gambel oak  ponderosa pine		0 43	Gambel oak,   ponderosa pine
	 	00	45	ponderosa prine
Zuni	Gambel oak		0	Gambel oak,
	ponderosa pine	55	43	ponderosa pine
409:	1	 	 	l I
Rauster	Gambel oak		1 0	  Gambel oak, Rocky
	Rocky Mountain	i	0	Mountain juniper,
	juniper	1	[	ponderosa pine,
	ponderosa pine	1	!	twoneedle pinyon
410:	twoneedle pinyon	 	0 	 
Montillo	Gambel oak		0	ponderosa pine,
	Rocky Mountain		0	twoneedle pinyon
	juniper			
	ponderosa pine  twoneedle pinyon		43   0	 
	cwoneedie pinyon	 	0	 
Tsoodzil	Gambel oak	i	0	Gambel oak,
	ponderosa pine		32	ponderosa pine,
	twoneedle pinyon		0 	twoneedle pinyon
411:		 		 
Ligocki	Gambel oak		0	Gambel oak, Rocky
	Rocky Mountain		0	Mountain juniper,
	juniper	70		ponderosa pine,
	ponderosa pine  twoneedle pinyon	1	39   0	twoneedle pinyon

Table 7.--Forest Productivity--Continued

	Potential produ	   			
Map symbol and soil name		  Site   Volume  index of wood     fiber		Trees to manage	
			cu ft/ac		
412:	<u> </u>	 	 	 	
Rionutria	Douglas fir   Rocky Mountain		0   0	Douglas fir, Rocky   Mountain juniper,	
	juniper	 	1	ponderosa pine,	
	ponderosa pine		34	twoneedle pinyon	
	twoneedle pinyon		0	 	
Zaster	  Rocky Mountain	 	0	  Rocky Mountain	
	juniper			juniper, alligator	
	alligator juniper		0	juniper, oneseed	
	oneseed juniper		0   6	juniper, twoneedle	
	twoneedle pinyon	60	0	pinyon 	
414:	j	İ	į		
Zunalei	Gambel oak		0	Gambel oak, Rocky	
	Rocky Mountain		0	Mountain juniper,	
	juniper		22	ponderosa pine,	
	ponderosa pine  twoneedle pinyon		33   0	twoneedle pinyon	
	cwoneedie pinyon	 		 	
Corzuni	Gambel oak		0	Gambel oak, Rocky	
	Rocky Mountain		0	Mountain juniper,	
	juniper			ponderosa pine,	
	ponderosa pine		33	twoneedle pinyon	
	twoneedle pinyon	 	0 	 	
415:					
Tsoodzil	ponderosa pine	54	32	Gambel oak,	
				ponderosa pine,	
41.6				twoneedle pinyon	
416: Bluesky	  Douglas fir	 	l   0	  Douglas fir, Rocky	
bidesky	Rocky Mountain	 	:	Mountain juniper,	
	juniper			ponderosa pine,	
	ponderosa pine	i	0	twoneedle pinyon	
	twoneedle pinyon		0		
418:	 	 	 	 	
Asaayi	Gambel oak		0	Gambel oak, Rocky	
	Rocky Mountain	i 	j 0	Mountain juniper,	
	juniper			ponderosa pine,	
	ponderosa pine		96	twoneedle pinyon	
	twoneedle pinyon	 	0	 	
Osoridge	  Gambel oak		I I 0	  Gambel oak, Rocky	
-9-	Rocky Mountain	i	0	Mountain juniper,	
	juniper	İ	İ	ponderosa pine,	
	ponderosa pine		64	twoneedle pinyon	
	twoneedle pinyon		0		
	I	I	1		

Table 7.--Forest Productivity--Continued

Map symbol and soil name				Trees to manage	
			cu ft/ac		
419:	İ	İ	İ		
Fortwingate	Gambel oak  Rocky Mountain   juniper	i	0 0	Gambel oak, Rocky   Mountain juniper,	
	jumper   ponderosa pine   twoneedle pinyon	55	   43   0	ponderosa pine,   twoneedle pinyon	
	İ	İ	İ		
Cinnadale	Gambel oak  Rocky Mountain   juniper		0   0	Gambel oak, Rocky   Mountain juniper,   ponderosa pine,	
	ponderosa pine  twoneedle pinyon	65	   57   0	twoneedle pinyon	
550:	 	   	   		
Bryway	Rocky Mountain   juniper	 	0   0	Rocky Mountain juniper, oneseed	
	oneseed juniper twoneedle pinyon		0 29	juniper, twoneedle   pinyon	
555:	 	 	 	 	
Parkelei	oneseed juniper twoneedle pinyon		0 29	oneseed juniper, twoneedle pinyon	
Evpark	oneseed juniper twoneedle pinyon		   0   29	oneseed juniper, twoneedle pinyon	
	cwoneedie pinyon	121	29	twoneedie pinyon	
561: Flugle	oneseed juniper	 	   0	oneseed juniper,	
114910	twoneedle pinyon		14	twoneedle pinyon	
Plumasano	oneseed juniper twoneedle pinyon		   0   14	oneseed juniper, twoneedle pinyon	
565:			 		
Plumasano	oneseed juniper		0	oneseed juniper,	
	twoneedle pinyon   	82   	10   	twoneedle pinyon	

Table 8a.--Forestland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	1 1		Hazard of erosion on roads and tra		Suitability for roads (natural surface)		
		Rating class and   limiting features	Value   	Rating class and   limiting features	!	Rating class and   limiting features	Value
300: Regracic	    -  80 					    Moderately suited   Strength	0.50
315: Flugle	  -   50	  Slight   Slope/erodibility		  Moderate   Slope/erodibility	:	  Moderately suited   Strength	0.50
Fragua	 -  40 	  Slight   Slope/erodibility	    0.10	  Moderate   Slope/erodibility	    0.56	  Well suited 	   
317: Highdye	 -  35 	  Slight   Slope/erodibility	    0.22	  Severe   Slope/erodibility	    1.00	  Moderately suited   Slope	    0.50
Evpark	 -  30 	  Slight   Slope/erodibility	    0.12	  Moderate   Slope/erodibility	    0.56	  Moderately suited   Strength	    0.50
Bryway	 -  20 	  Slight   Slope/erodibility		  Moderate   Slope/erodibility	!	  Well suited 	   
320: Parkelei	   -  45 	    Slight   Slope/erodibility		    Moderate   Slope/erodibility	!	    Well suited 	   
Fraguni	 -  40 	  Slight   Slope/erodibility	    0.08	  Slight   Slope/erodibility	    0.25	  Well suited 	   
332: Evpark	 -  50 	  Slight   Slope/erodibility		  Moderate   Slope/erodibility		  Moderately suited   Strength	    0.50
Arabrab	 -  40 	  Slight   Slope/erodibility	    0.08	  Moderate   Slope/erodibility	    0.44	  Well suited 	   
345: Tuces	 -  40   	  Moderate   Slope/erodibility   	    0.59 	  Severe   Slope/erodibility   	    1.00 	  Poorly suited   Slope   Strength	  1.00  0.50
350: Toldohn	  -   35 	    Moderate   Slope/erodibility 	      0.39	    Severe   Slope/erodibility 	      1.00	    Poorly suited   Slope   Strength	    1.00  0.50
Vessilla	 -  30 	  Slight   Slope/erodibility	    0.16	  Moderate   Slope/erodibility	    0.89	  Moderately suited   Slope	    0.50
365: Vessilla	   -  55 	    Slight   Slope/erodibility 	      0.16	    Moderate   Slope/erodibility 	      0.89	    Moderately suited   Slope 	      0.50

Table 8a.--Forestland Management--continued

Map symbol and soil name	Pct of map unit	į		Hazard of erosic		Suitability for roads (natural surface)	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features		Rating class and   limiting features	Value
366: Bosonoak	     95 			    Moderate   Slope/erodibility		    Moderately suited   Strength	      0.50
367: Chunkmonk	     85   			  Moderate   Slope/erodibility 		  Moderately suited   Slope 	      0.50
368: Simitarq	   60 	  Slight   Slope/erodibility		  Moderate   Slope/erodibility		  Well suited 	
Celavar	   20 	  Slight   Slope/erodibility	!	  Moderate   Slope/erodibility		  Well suited 	   
385: Mcorreon	   65   	  Moderate   Slope/erodibility 		  Severe   Slope/erodibility 		  Poorly suited   Slope   Strength	    1.00  0.50
395: Cabezon	   60 	  Slight   Slope/erodibility		  Moderate   Slope/erodibility		  Moderately suited   Strength	0.50
Mcorreon	   30   	! -	!	  Moderate   Slope/erodibility 		  Moderately suited   Strength   Stickiness	  0.50  0.50
400: Shoemaker	     45 	    Slight   Slope/erodibility		    Moderate   Slope/erodibility		    Well suited 	     
Stozuni	   35 	  Slight   Slope/erodibility	!	  Moderate   Slope/erodibility		  Well suited 	
403: Valnor	     50 	    Slight   Slope/erodibility 		  Moderate   Slope/erodibility   Slope/erodibility	0.89	  Moderately suited   Slope 	      0.50
Techado	   30     	  Moderate   Slope/erodibility   	!	  Moderate   Slope/erodibility   		  Poorly suited   Slope   Strength	    1.00  0.50
404: Techado	   35 	  Moderate   Slope/erodibility 	    0.49 	  Severe   Slope/erodibility 		  Poorly suited   Slope   Strength	    1.00  0.50
Stozuni	   25 	  Slight   Slope/erodibility		  Moderate   Slope/erodibility		  Moderately suited   Slope	    0.50
405: Fortwingate	     50 	    Slight   Slope/erodibility 		  Moderate   Slope/erodibility 		  Moderately suited   Strength 	      0.50

Table 8a.--Forestland Management--continued

Map symbol and soil name	  Pct   of  map  unit	or off-trail eros:	Hazard of erosi on roads and tra		Suitability for roads (natural surface)		
	     						Value
405: Owlrock	    -  35	    Slight   Slope/erodibility		    Slight   Slope/erodibility		    Well suited	
407: Cinnadale	 -  50 	  Slight   Slope/erodibility		  Moderate   Slope/erodibility		  Moderately suited   Slope	0.50
Heckly	 -  35   	  Moderate   Slope/erodibility   		  Severe   Slope/erodibility   		  Poorly suited   Slope   Sandiness	1.00
408: Mirabal	  -   50 	  Moderate   Slope/erodibility		    Severe   Slope/erodibility 		    Poorly suited   Slope 	1.00
Zuni	-  40 	  Slight   Slope/erodibility 		  Moderate   Slope/erodibility 		  Moderately suited   Slope   Stickiness	0.50
409: Rauster	  -  60   	  Moderate   Slope/erodibility   		  Severe   Slope/erodibility   		Poorly suited   Slope   Stickiness   Strength	  1.00  0.50  0.50
410: Montillo	   -  50 	    Slight   Slope/erodibility 		  Moderate   Slope/erodibility 		  Moderately suited   Slope   Strength	0.50
Tsoodzil	 -  40   	  Moderate   Slope/erodibility   	    0.39 	  Severe   Slope/erodibility   		  Poorly suited   Slope   Sandiness	  1.00  0.50
411: Ligocki	  -   45 	    Slight   Slope/erodibility 		  Moderate   Slope/erodibility 		    Well suited   	     
412: Rionutria	  -  25   		    0.20	  Moderate   Slope/erodibility 		  Moderately suited   Slope   Strength	    0.50  0.50
Zaster	 -  25   	  Moderate   Slope/erodibility 	    0.49 	  Severe   Slope/erodibility 	    1.00	  Poorly suited   Slope   Sandiness	  1.00  0.50
413: Morclay	   -  85   	    Slight   Slope/erodibility   	      0.06 	    Slight   Slope/erodibility   		  Moderately suited   Stickiness   Strength	      0.50  0.50

Table 8a.--Forestland Management--continued

and soil name	Pct   Hazard of off-road   of   or off-trail erosion   map   unit		Hazard of erosion on roads and trans		   Suitability for r   (natural surfac		
	     	Rating class and limiting features		Rating class and limiting features			Value
414:						 	
Zunalei	50   			Moderate   Slope/erodibility 		Well suited   	
Corzuni	40   40			  Moderate   Slope/erodibility		  Well suited 	
415: Tsoodzil	     60 	!		    Severe   Slope/erodibility 		    Poorly suited   Slope 	1.00
418: Asaayi	40	  Slight   Slope/erodibility		  Moderate   Slope/erodibility		  Moderately suited   Slope	0.50
Osoridge	   35     	! -		  Moderate   Slope/erodibility     		  Moderately suited   Slope   Stickiness   Strength	  0.50  0.50  0.50
419: Fortwingate	   35 	1		  Severe   Slope/erodibility		  Poorly suited   Slope	1.00
Cinnadale	   30 	  Slight 	   	  Moderate 	 	  Moderately suited 	
550:							
Bryway	50   	! -		Slight   Slope/erodibility 		Moderately suited   Strength	0.50
Galzuni	   35     	  Slight   Slope/erodibility   Slope/erodibility 	0.10	!	0.44	  Well suited     	     
555:		[ [ ] ]		Madauaka		Mall mitted	
Parkelei	45   	Slope/erodibility   Slope/erodibility		Moderate   Slope/erodibility 		Well suited   	   
Evpark	35	Slight   Slope/erodibility		Moderate   Slope/erodibility		  Well suited 	į Į
560:	 	<u> </u>	 		 		
Flugle	45	Slight   Slope/erodibility		Moderate   Slope/erodibility		  Well suited 	
Teczuni	   35 	  Slight   Slope/erodibility 	    0.06	  Moderate   Slope/erodibility 		  Moderately suited   Strength	0.50
561:							
Flugle	50 	Slight   Slope/erodibility	  0.10	Moderate   Slope/erodibility	  0.56	Well suited 	
Plumasano	   40 	  Slight   Slope/erodibility 	    0.10 	  Moderate   Slope/erodibility 		  Well suited   	   

Table 8b.--Forestland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct of map unit	hand planting	   		r ing	   Suitability for us   harvesting equipm   	
	   	Rating class and   limiting features	1	Rating class and   limiting features	1	Rating class and   limiting features	Value
300: Regracic	     80   	! -	      0.50	    Moderately suited   Stoniness   Stickiness	      0.50  0.50	    Moderately suited   Strength	      0.50
315: Flugle	50	    Well suited 	     	    Well suited 		  Moderately suited   Strength	0.50
Fragua	40	  Well suited 	   	  Moderately suited   Slope	0.50		
317: Highdye	     35 		      0.50	  Moderately suited   Stickiness   Slope	      0.50  0.50	    Well suited   	     
Evpark	30	  Well suited 	   	  Moderately suited   Slope	    0.50	  Moderately suited   Strength	0.50
Bryway	20	  Moderately suited   Stickiness 	    0.50 	  Moderately suited   Stickiness   Slope	    0.50  0.50	  Well suited   	
320: Parkelei	     45	    Well suited 	     	    Well suited 	     	    Well suited 	   
Fraguni	40	  Well suited 	   	Well suited		  Well suited 	   
332: Evpark	50	  Well suited	   	  Well suited	 	  Moderately suited   Strength	0.50
Arabrab	40	•	    0.50	  Moderately suited   Stickiness	    0.50	  Well suited 	   
345: Tuces	   40     	  Moderately suited   Stoniness   Stickiness 	    0.50  0.50	  Unsuited   Slope   Stoniness   Stickiness	    1.00  0.75  0.50	  Moderately suited   Slope   Strength 	    0.50  0.50
350: Toldohn	   35       	  Moderately suited   Restrictive layer   Stickiness 	    0.50  0.50	  Poorly suited   Slope   Stickiness   Stoniness	    0.75  0.50  0.50	  Moderately suited   Strength   Slope 	    0.50  0.50

Table 8b.--Forestland Management--Continued

Map symbol and soil name	  Pct   of  map  unit	hand planting	- 1		r ing	   Suitability for us   harvesting equipm   	
	     		Value				Value
350: Vessilla	     30 	    Well suited 	       	    Moderately suited   Slope	      0.50	    Well suited 	
365: Vessilla	     55 	    Well suited 	     	    Moderately suited   Slope	      0.50	    Well suited 	
367: Chunkmonk	   85   	-	    0.50	!	    1.00  0.50	  Well suited   	
368: Simitarq	     60   	-	      0.50		      0.50  0.50	  Well suited   	
Celavar	20	  Well suited 	   	  Moderately suited   Slope	    0.50	  Well suited 	
385: Mcorreon	   65     	Stickiness	      0.50  0.50	Slope	    1.00  0.75  0.50	· -	    0.50  0.50
395: Cabezon	   60     	Stickiness	      0.50  0.50	Stickiness	      1.00  0.50  0.50	    Moderately suited   Strength   	    0.50
Mcorreon	   30   	-	    0.50 	Stickiness	    0.50  0.50		  0.50  0.50
400: Shoemaker	     45 	    Well suited 	     	    Moderately suited   Slope	      0.50	    Well suited 	     
Stozuni	   35 	  Well suited 	   	  Moderately suited   Slope	    0.50	  Well suited 	
403: Valnor	     50 	    Moderately suited   Stickiness 	      0.50	  Moderately suited   Stickiness   Slope	      0.50  0.50	    Well suited   	
Techado	   30       	  Moderately suited   Stickiness     	    0.50   	! -	  0.50  0.50  0.50	  Moderately suited   Strength   	  0.50   

Table 8b.--Forestland Management--Continued

Map symbol and soil name	Pct  Of  map  unit	hand planting		Suitability fo		   Suitability for us   harvesting equipm 	
	     	Rating class and   limiting features	Value	Rating class and   limiting features	Value		Value
404: Techado	     35   	  Poorly suited   Stickiness 	        0.75	  Poorly suited   Slope   Stickiness   Stoniness	    0.75  0.75  0.50	<u>-</u>	      0.50  0.50
Stozuni	   25     	  Unsuited   Restrictive layer   		  Moderately suited   Slope   Stoniness	    0.50  0.50	  Well suited     	     
405: Fortwingate	   50   	-	    0.75 	  Poorly suited   Stickiness   Slope	    0.75  0.50	  Moderately suited   Strength	    0.50
Owlrock	35	Poorly suited   Stoniness	    0.75 	Unsuited   Stoniness   Slope	1.00	  Well suited   	
407: Cinnadale	   50   	  Moderately suited   Stoniness 	    0.50 	  Poorly suited   Stoniness   Slope	    0.75  0.50	  Well suited   	     
Heckly	   35       	Moderately suited   Stickiness   Sandiness   Stoniness	  0.50  0.50  0.50	!	  0.75  0.75  0.50  0.50	<u>-</u>	  0.50  0.50 
408: Mirabal	   50     	!	    0.50  0.50	  Unsuited   Stoniness   Slope   Sandiness	    1.00  0.75  0.50	  Moderately suited   Slope   	0.50
Zuni	40   40   	  Poorly suited   Stickiness   	    0.75     	  Poorly suited   Stickiness   Stoniness   Slope	  0.75  0.50  0.50	  Moderately suited   Stickiness   	  0.50   
409: Rauster	   60     	  Poorly suited   Stickiness	    0.75   	  Poorly suited   Slope   Stickiness	0.75	  Moderately suited   Strength   Stickiness   Slope	  0.50  0.50  0.50
410: Montillo	   50       	  Poorly suited   Stickiness   	      0.75   	  Poorly suited   Stickiness   Slope   Stoniness	    0.75  0.50  0.50	  Moderately suited   Strength   	    0.50   

Table 8b.--Forestland Management--Continued

Map symbol and soil name	  Pct   of  map  unit	hand planting	Suitability for   m		Suitability for   mechanical planting   		e of ment
	     						Value
410: Tsoodzil	     40     	Stickiness	      0.75  0.50  0.50	Slope	    0.75  0.75  0.75  0.50		      0.50  0.50
411: Ligocki	   45 	:	    0.50	:	    0.50	  Well suited 	     
412: Rionutria	   25   	  Poorly suited   Stoniness   Stickiness	    0.75  0.50	!	    1.00  0.50  0.50	  Moderately suited   Strength 	0.50
Zaster	   25     	  Moderately suited   Stoniness   Sandiness	    0.50  0.50	!	  1.00  0.75  0.50		  0.50  0.50
413: Morclay	     85   	  Poorly suited   Stickiness	      0.75 	  Poorly suited   Stickiness	      0.75	  Moderately suited   Strength   Stickiness	    0.50  0.50
414: Zunalei	     50 	    Well suited 	     	  Moderately suited   Slope	0.50	    Well suited 	
414: Corzuni	40	    Well suited 	     	  Moderately suited   Slope	      0.50	    Well suited	
415: Tsoodzil	   60       	  Moderately suited   Stickiness   Stoniness 	    0.50  0.50	Slope	    1.00  1.00  0.50		      0.50   
418: Asaayi	40	  Moderately suited   Stickiness	    0.50	  Moderately suited   Stickiness   Slope	    0.50  0.50	  Well suited   	
Osoridge	   35       	  Poorly suited   Stickiness     	    0.75   	Poorly suited   Stickiness   Stoniness   Slope	  0.75  0.50  0.50	  Moderately suited   Strength   Stickiness   	  0.50  0.50 

Table 8b.--Forestland Management--Continued

Map symbol and soil name	  Pct   of  map  unit	hand planting		!	Suitability for mechanical planting		e of ment
	     		Value	Rating class and   limiting features			Value   
419: Fortwingate	     35   	Stoniness	    0.75  0.50		    1.00  0.75  0.50	    Moderately suited   Slope   	      0.50
Cinnadale	   30   	  Unsuited   Restrictive layer   Stoniness 	    1.00  0.75	Unsuited Stoniness Slope	  1.00  0.50	  Well suited   	
425: Montillo	   50 	  Poorly suited   Stickiness	    0.75	  Poorly suited   Stickiness	    0.75	  Moderately suited   Strength   Stickiness	0.50
Canoneros	   35     	  Poorly suited   Stickiness   Stoniness	    0.75  0.50		    0.75  0.75	  Moderately suited   Strength   Stickiness	  0.50  0.50
430: Montillo	   80 	-	    0.50	  Moderately suited   Stickiness	    0.50	  Moderately suited   Strength 	0.50
435: Tsoodzil	   50   	  Poorly suited   Stickiness   	    0.75 	  Poorly suited   Slope   Stickiness   Stoniness	  0.75  0.75  0.50	  Moderately suited   Slope   	    0.50 
Amcec	   40     	•	    0.50  0.50 		  1.00  0.75  0.50	  Moderately suited   Slope   Sandiness	  0.50  0.50
550: Bryway	     50 	    Moderately suited   Stickiness 	      0.50	  Moderately suited   Stickiness	      0.50	    Moderately suited   Strength 	0.50
555: Parkelei	   45 	  Well suited	   	  Moderately suited   Slope	0.50	  Well suited	
Evpark	   35   	  Well suited   	     	  Moderately suited   Slope 	    0.50	  Well suited   	     
560: Flugle	j	İ	   	  Well suited 		  Well suited	
Teczuni	35   	Well suited   	   	Well suited   	   	Moderately suited   Strength 	0.50

Table 8b.--Forestland Management--Continued

Map symbol and soil name	Pct of map unit	Suitability for   hand planting		Suitability for     mechanical planting   		Suitability for use of harvesting equipment	
	   	Rating class and   limiting features	Value	Rating class and   limiting features	Value	Rating class and   limiting features	Value
561: Flugle	   -  50 	    Well suited 	     	    Moderately suited   Slope	      0.50	    Well suited 	
Plumasano	 -  40 	  Well suited 		  Moderately suited   Slope	0.50	  Well suited 	
565: Plumasano	   -  65   	  Well suited   		  Poorly suited   Slope 	      0.75	  Moderately suited   Slope 	      0.50

Table 9a.--Recreation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	-   	Camp areas			Playgrounds	
	   	Rating class and limiting features	Value   	Rating class and   limiting features	1	Rating class and   limiting features	Value
8: Water	    100	    Not rated	     	    Not rated 	     	    Not rated	
10: Tsosie	   35   	  Very limited   Sodium content   Flooding	    1.00  1.00	  Very limited   Sodium content 	    1.00	  Very limited   Sodium content   Slope	1.00
Councelor	30	  Very limited   Flooding	1	Not limited	   	  Somewhat limited   Slope	0.01
Blancot	   20 	  Not limited   	     	  Not limited   	     	  Somewhat limited   Slope 	    0.01
11: Doakum	   60 	  Not limited 	   	  Not limited	i   	  Somewhat limited   Slope	0.03
Betonnie	   25 	  Not limited 	   	  Not limited 	 	  Somewhat limited   Slope	0.50
12: Calladito	     55 	    Somewhat limited   Too sandy 	      0.96	  Somewhat limited   Too sandy 	      0.96	    Somewhat limited   Too sandy   Slope	    0.96  0.13
Elias	   30       	Sodium content	  1.00  0.41 	1	  1.00  0.41 	   Very limited   Sodium content   Restricted   permeability   Slope	  1.00  0.41    0.13
13: Councelor	     60 	:	      1.00	  Not limited 	     	  Somewhat limited   Slope	0.50
Calladito	   30   	  Somewhat limited   Too sandy 	    0.96	Somewhat limited   Too sandy	    0.96	  Somewhat limited   Too sandy   Slope	  0.96  0.50
14: Councelor	     30 	    Very limited   Flooding	      1.00	    Not limited 	     	    Very limited   Slope	1.00
Eslendo	30	  Very limited   Depth to bedrock   Slope   Dusty		Slope	1	  Very limited   Depth to bedrock   Slope   Dusty	  1.00  1.00  0.50

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 		   Picnic areas   		   Playgrounds   	
	     		Value	Rating class and   limiting features			Value
14: Calladito	25	    Somewhat limited   Too sandy	      0.96	  Somewhat limited   Too sandy	      0.96	  Somewhat limited   Too sandy   Slope	    0.96  0.50
16: Starlake	   85           	  Very limited   Sodium content   Flooding   Too clayey     Restricted   permeability	  1.00  1.00  0.50    0.45	  Very limited   Sodium content   Too clayey   Restricted   permeability	  1.00  0.50  0.45 	  Very limited   Sodium content   Too clayey   Restricted   permeability   Slope	  1.00  0.50  0.45    0.01
22: Querencia	50	  Not limited 	   	  Not limited 	 	  Very limited   Slope	1.00
Lavodnas	35	Very limited   Depth to bedrock   Restricted   permeability   Dusty   Slope	  1.00  1.00    0.50    0.01	į		  Very limited   Depth to bedrock   Slope     Restricted   permeability   Dusty	  1.00  1.00    1.00    0.50
30: Orlie	     45 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	
Tinian	   40   	  Somewhat limited   Dusty   	    0.50   	  Somewhat limited   Dusty   	    0.50   	  Somewhat limited   Depth to bedrock   Slope   Dusty	  0.90  0.50  0.50
40: Nuffel	90	  Very limited   Flooding   Dusty	    1.00  0.50	  Somewhat limited   Dusty   Flooding	    0.50  0.40	  Very limited   Flooding   Dusty	  1.00  0.50
42: Suwanee	90	  Very limited   Flooding	1.00	  Somewhat limited   Flooding	0.40	  Very limited   Flooding	1.00
44: Suwanee	90	  Very limited   Flooding   Too clayey     Restricted   permeability	    1.00  0.50    0.41	  Somewhat limited   Too clayey   Restricted   permeability   Flooding	  0.50  0.41    0.40	  Very limited   Flooding   Too clayey     Restricted   permeability	  1.00  0.50    0.41

Table 9a.--Recreation--Continued

Map symbol and soil name	Pct.   Camp areas   of   map   unit			Picnic areas		   Playgrounds   	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   
45: Nutreeah	     90       	  Very limited   Flooding     Restricted   permeability	    1.00    0.45	  Somewhat limited   Restricted   permeability 	0.45	  Somewhat limited   Restricted   permeability 	      0.45   
47: Conchovar	   90       	  Very limited   Flooding     Restricted   permeability	  1.00    0.45	  Somewhat limited   Restricted   permeability 	    0.45   	  Somewhat limited   Restricted   permeability 	0.45
49: Concho	   85       	  Very limited   Flooding     Restricted   permeability	    1.00    0.41	  Somewhat limited   Restricted   permeability 	      0.41   	  Somewhat limited   Restricted   permeability 	
51: Kwakina	     90   	  Very limited   Flooding   Too sandy	      1.00  0.87	    Somewhat limited   Too sandy 	      0.87	    Somewhat limited   Too sandy   Flooding	    0.87  0.60
52: Zuniven	     90   	  Very limited   Flooding   Too sandy	      1.00  0.92	  Somewhat limited   Too sandy   Flooding	      0.92  0.40	  Very limited   Flooding   Too sandy	    1.00  0.92
53: Hawaikuh	80	    Not limited		    Not limited		    Not limited	
54: Venadito	   90         	  Very limited   Flooding   Too clayey     Restricted   permeability	    1.00  0.50    0.45	  Somewhat limited   Too clayey   Restricted   permeability	    0.50  0.45   		  0.60  0.50    0.45
55: Sparham	95   95       	  Very limited   Flooding   Restricted   permeability	    1.00    0.45	  Somewhat limited   Restricted   permeability   Flooding	    0.45    0.40	  Very limited   Flooding   Restricted   permeability	  1.00    0.45
60: Redpen	90	    Not limited 	     	    Not limited 		    Not limited 	     

Table 9a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	 		Picnic areas   		Playgrounds   	
	   	Rating class and   limiting features	Value	Rating class and   limiting features	Value   	Rating class and   limiting features	Value
100: Norkiki	     45   	    Somewhat limited   Too sandy 	0.79	  Somewhat limited   Too sandy 	        0.79	  Somewhat limited   Too sandy   Depth to bedrock   Slope	    0.79  0.65  0.50
Kimmoli	40	  Very limited   Depth to bedrock 		  Very limited   Depth to bedrock   		  Very limited   Depth to bedrock   Slope 	  1.00  0.13
110: Benally	   60       	  Very limited   Sodium content   Restricted   permeability	  1.00  0.21 	'	  1.00  0.21 	  Very limited   Sodium content   Restricted   permeability   Slope   Gravel content	  1.00  0.21    0.13  0.06
Fruitland	   25   	  Somewhat limited   Too sandy   	  0.94 	  Somewhat limited   Too sandy   	    0.94 	  Somewhat limited   Too sandy   Slope 	  0.94  0.13
111: Yelives	85	  Very limited   Flooding 	1.00	  Not limited   	       	  Somewhat limited   Slope 	0.01
115: Razito	45	  Somewhat limited   Too sandy 	    0.79	  Somewhat limited   Too sandy 	    0.79 	  Somewhat limited   Too sandy   Slope	  0.79  0.50
Shiprock	40	  Not limited 		  Not limited 	   	  Somewhat limited   Slope	0.50
116: Fajada	   30             	  Very limited   Sodium content   Restricted   permeability   Gravel content	   1.00   0.96     0.18	!	  1.00  0.96    0.18		  1.00  1.00    0.96    0.65  0.13
Huerfano	30	  Very limited   Sodium content   Depth to bedrock   Restricted   permeability   Dusty	1.00	   Very limited   Sodium content   Depth to bedrock   Restricted   permeability   Dusty	1.00	   Very limited   Depth to bedrock   Sodium content   Restricted   permeability   Dusty   Slope	  1.00  1.00  0.96    0.50  0.13

Table 9a.--Recreation--Continued

and soil name	  Pct.   of  map  unit	 		Picnic areas		Playgrounds   	
	     		Value	Rating class and   limiting features			Value
116: Benally	   25     		    1.00  0.21   		    1.00  0.21   	permeability	   1.00  0.21   0.06  0.01
118: Farb	   35   	  Very limited   Depth to bedrock	1	  Very limited   Depth to bedrock	:	  Very limited   Depth to bedrock   Slope	    1.00  1.00
Chipeta	   30           	! -	  1.00  1.00  0.63  0.50  0.41	Depth to bedrock   Slope   Too clayey	1.00	Salinity   Slope	  1.00  1.00  1.00  0.50  0.41
Rock outcrop	   25	  Not rated		  Not rated	 	  Not rated	
120: Doak	     55 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	0.01
Shiprock	   30   	  Somewhat limited   Too sandy 	    0.92 	  Somewhat limited   Too sandy 	    0.92 	  Somewhat limited   Too sandy   Slope	  0.92  0.50
121: Badland	     90 	    Not rated 	     	    Not rated 	     	    Not rated 	     
122: Farb	   45     	  Very limited   Gravel content   Depth to bedrock	1.00		1.00	  Very limited   Gravel content   Depth to bedrock   Slope	  1.00  1.00  0.87
Rock outcrop	   45	  Not rated	   	  Not rated	   	  Not rated	
125: Sanfeco	     75   	Flooding	      1.00	  Somewhat limited   Restricted   permeability	      0.96	  Somewhat limited   Restricted   permeability	      0.96
	   	Restricted   permeability 	0.96   	   	   	   	   

Table 9a.--Recreation--Continued

and soil name	Pct. of map unit	 		Picnic areas   		Playgrounds   	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
130: Chipeta	     40         	Dusty Restricted permeability		Slope   Dusty   Restricted   permeability	1	Slope   Gravel content   Dusty	   1.00  1.00  1.00  0.50 
Badlands	30	Not rated		Not rated		  Not rated	
Moncisco	   15       	Gravel content	  1.00  1.00 	!	  1.00  1.00 	  Very limited   Gravel content   Slope   Content of large   stones	  1.00  1.00  0.01
150:	 					 	
Riverwash	65 	Not rated		Not rated		Not rated	
Escawetter	   25   	Flooding	1.00	! -	0.44	  Very limited   Flooding   Too sandy	1.00
160:	 	 	 			 	
Escawetter	40   	Flooding	  1.00  1.00	! -	  1.00  0.40	Very limited   Too sandy   Flooding	  1.00  1.00
Riverwash	   35 	  Not rated 	   	  Not rated 	   	  Not rated 	   
Razito	     15   	    Very limited   Too sandy 	      1.00	 	      1.00	  Very limited   Too sandy   Slope	1.00
205:							
Penistaja	45	Not limited	 	Not limited	 	Somewhat limited   Slope	0.13
Tintero	   40 	  Not limited 	     	  Not limited 	     	  Somewhat limited   Slope 	    0.87
208: Marianolake	     85 	  Not limited 	       	  Not limited 	       	  Somewhat limited   Slope 	      0.50

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 		Picnic areas		   Playgrounds   	
	     		Value     	Rating class and   limiting features	Value     	Rating class and   limiting features	Value
210: Marianolake	     50 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	      0.50
Skyvillage	   30         	Depth to bedrock		  Very limited   Depth to bedrock   Gravel content   		  Very limited   Gravel content   Depth to bedrock   Slope   Content of large   stones	0.50
212: Rehobeth	   90           	Ponding	  1.00  1.00    0.41	  Very limited   Ponding   Restricted   permeability 	  1.00  0.41 	  Very limited   Ponding   Flooding     Restricted   permeability	  1.00  0.60    0.41
215: Viuda	   35             	Very limited   Depth to bedrock   Restricted   permeability   Content of large   stones   Gravel content	1.00    0.96	Very limited   Depth to bedrock   Restricted   permeability   Content of large   stones   Gravel content	1.00    0.96	Very limited   Depth to bedrock   Content of large stones   Gravel content   Restricted   permeability   Slope	į
Penistaja	   30 	  Not limited 	   	  Not limited 	   	  Somewhat limited   Slope	0.13
Rock outcrop	   25 	  Not rated 	   	  Not rated 	   	  Not rated 	   
220: Hagerwest	   50 	  Not limited   	     	  Not limited   	 	  Somewhat limited   Slope   Depth to bedrock	  0.13  0.10
Bond	   35     	  Very limited   Depth to bedrock   	    1.00 	  Very limited   Depth to bedrock 	    1.00 	  Very limited   Depth to bedrock   Slope	  1.00  0.50
225: Aquima	   40 	  Somewhat limited   Dusty	    0.50	  Somewhat limited   Dusty	    0.50	  Somewhat limited   Dusty   Slope	0.50
Hawaikuh	   40   	  Somewhat limited   Dusty   	    0.50   	  Somewhat limited   Dusty   	    0.50   	  Somewhat limited   Dusty   Slope 	  0.50  0.13

Table 9a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	-    -		   Picnic areas   		   Playgrounds   	
	     		Value				Value
230: Sparank	     40     	  Very limited   Flooding     Restricted   permeability	    1.00    0.45	  Somewhat limited   Restricted   permeability 	      0.45   	  Somewhat limited   Flooding     Restricted   permeability	    0.60    0.45
San Mateo	   35 	  Very limited   Flooding	1.00	  Not limited 	   	  Somewhat limited   Flooding	0.60
Zia	   20 	  Very limited   Flooding	1.00	  Not limited 	   	  Somewhat limited   Slope	0.01
235: Notal	   45         	  Very limited   Flooding   Sodium content   Dusty     Restricted   permeability	   1.00  1.00  0.50    0.45	  Very limited   Sodium content   Dusty   Restricted   permeability	    1.00  0.50  0.45 	  Very limited   Sodium content   Dusty   Restricted   permeability	  1.00  0.50  0.45 
Hamburn	   40 	  Very limited   Flooding 	    1.00	  Not limited   	     	  Somewhat limited   Flooding 	    0.60
240: Breadsprings	     35   	    Very limited   Flooding   Ponding   Dusty	    1.00  1.00  0.50	    Very limited   Ponding   Dusty 	      1.00  0.50	    Very limited   Ponding   Dusty	    1.00  0.50
Nahodish	   35           	Very limited Flooding Ponding Dusty Restricted permeability	  1.00  1.00  0.50    0.41	! -	  1.00  0.50  0.41 	Very limited Ponding Dusty Restricted permeability	  1.00  0.50  0.41 
241: Mentmore	     85     	  Somewhat limited   Dusty 	      0.50 	  Somewhat limited   Dusty 	      0.50 	  Somewhat limited   Slope   Dusty 	    0.50  0.50
242: Gish	45   	  Very limited   Flooding   Restricted	    1.00    0.41	  Somewhat limited   Restricted   permeability	      0.41 	  Somewhat limited   Slope     Restricted	0.50
Mentmore	       35 	Restricted   permeability    Not limited 	 	    Not limited   	         	Restricted   permeability    Somewhat limited   Slope	0.41        0.50

Table 9a. -- Recreation -- Continued

Map symbol and soil name	Pct. of map unit	of		   Picnic areas   		   Playgrounds   	
	     		Value   		Value		Value
244: Buckle	     85 	    Not limited 	       	    Not limited 	       	    Somewhat limited   Slope	      0.50
245: Buckle	35	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	0.50
Gapmesa	30	  Not limited 	   	  Not limited 	   	  Somewhat limited   Slope	0.01
Barboncito	   25         	Depth to bedrock	  1.00  0.94  0.22 	   Very limited   Depth to bedrock   Too sandy   Restricted   permeability	:	  Very limited   Depth to bedrock   Too sandy   Restricted   permeability   Slope	  1.00  0.94  0.22    0.01
250: Hospah	   35             	Very limited   Depth to bedrock   Slope   Content of large   stones   Restricted   permeability   Gravel content	1.00	Slope     Content of large   stones   Restricted   permeability	1.00  1.00 	Very limited   Depth to bedrock   Content of large   stones   Slope   Gravel content   Restricted   permeability	1
Skyvillage	30   30	Depth to bedrock	  1.00  0.68 	  Very limited   Depth to bedrock   Gravel content   		  Very limited   Gravel content   Depth to bedrock   Slope   Content of large   stones	0.87
Rock outcrop	25	  Not rated 	   	  Not rated 	   	  Not rated 	
255: Farview	50	  Very limited   Depth to bedrock   Too sandy   Slope 	    1.00  0.89  0.01	  Very limited   Depth to bedrock   Too sandy   Slope 		  Very limited   Depth to bedrock   Slope   Too sandy   Gravel content	    1.00  1.00  0.89  0.78
Rock outcrop	35	  Not rated 	   	  Not rated 	   	  Not rated 	

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 		   Picnic areas   		   Playgrounds   	
	     		Value	Rating class and   limiting features			Value
258: Eagleye	   40     	  Very limited   Depth to bedrock   Slope   Restricted   permeability	    1.00  1.00  0.41	Slope		Slope	    1.00  1.00  0.41
Atchee	   35   	  Very limited   Depth to bedrock	    1.00 	  Very limited   Depth to bedrock	    1.00 	  Very limited   Depth to bedrock   Slope	  1.00  1.00
Rock outcrop	20	  Not rated 	 	  Not rated 	   	  Not rated 	   
260: Quarries and Pits	     95 	    Not rated 	   	    Not rated 	     	    Not rated 	   
261: Coal Mine Lands	  100	  Not rated 	   	  Not rated	 	  Not rated 	
265: Uranium Mined Lands-	95	  Not rated		  Not rated		    Not rated	
270: Alesna	   70   1           		  1.00  0.61    0.50  0.42 	Gravel content  Dusty Content of large stones	  1.00  0.61    0.50  0.42    0.41	Content of large   stones   Gravel content   Dusty	  1.00  1.00    1.00  0.50    0.41
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
275: Eldado	   85   	  Somewhat limited   Gravel content 	    0.62 	  Somewhat limited   Gravel content 	    0.62 	  Very limited   Gravel content   Slope	  1.00  0.13
280: Azabache	   85         	  Very limited   Sodium content   Gravel content   Restricted   permeability	  1.00  1.00  1.00 	  Very limited   Gravel content   Sodium content   Restricted   permeability	  1.00  1.00  1.00 	  Very limited   Gravel content   Sodium content   Restricted   permeability   Slope	  1.00  1.00  1.00    0.87
290: Rock outcrop	   45     	  Not rated     	         	  Not rated     	         	  Not rated     	       
	   	  -  -	   	   	   	 	   

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 		   Picnic areas   		   Playgrounds   	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   		Value   
290: Westmion	30   30	  Very limited   Slope   Depth to bedrock   Restricted   permeability	1.00	  Very limited   Slope   Depth to bedrock   Restricted   permeability	1.00	Very limited   Slope   Depth to bedrock   Restricted   permeability   Content of large   stones	0.41
Skyvillage	   15       	  Very limited   Depth to bedrock     Slope 		  Very limited   Depth to bedrock     Slope 		  Very limited   Depth to bedrock   Slope   Content of large   stones	0.87
291: Rock outcrop	50	  Not rated	į į	  Not rated	į Į	  Not rated	į Į
Eagleye	   25           	  Very limited   Slope   Depth to bedrock   Gravel content   Restricted   permeability	  1.00  1.00  0.71  0.05	Very limited   Slope   Depth to bedrock   Gravel content   Restricted   permeability	1.00	Very limited   Gravel content   Slope   Depth to bedrock   Content of large   stones   Restricted   permeability	
Atchee	   15         	  Very limited   Depth to bedrock   Gravel content   Slope 		   Very limited   Depth to bedrock   Gravel content   Slope 		Very limited   Gravel content   Depth to bedrock   Slope   Content of large   stones	1.00
300: Regracic	   80   	  Somewhat limited   Gravel content 	      0.90 	  Somewhat limited   Gravel content 	      0.90 	    Very limited   Gravel content   Slope 	  1.00  0.50
305: Celavar	50   50   	  Somewhat limited   Dusty 	    0.50 	  Somewhat limited   Dusty 	    0.50 	Dusty	  0.50  0.50  0.35
Atarque	   35     	  Very limited   Depth to bedrock   		  Very limited   Depth to bedrock   	1	  Very limited   Depth to bedrock   Slope 	  1.00  0.50

Table 9a. -- Recreation -- Continued

Map symbol and soil name	Pct. of map unit	-    -	Camp areas     		Picnic areas       		
	     		Value	Rating class and   limiting features	Value	   Rating class and   limiting features 	Value
308: Fikel	50	  Somewhat limited   Restricted   permeability	      0.41 	  Somewhat limited   Restricted   permeability	0.41	   Restricted	      0.50    0.41
Venzuni	   40     	  Very limited   Flooding   Too clayey     Restricted   permeability	    1.00  0.50    0.45	  Somewhat limited   Too clayey   Restricted   permeability	    0.50  0.45 	permeability    Somewhat limited   Too clayey   Restricted   permeability   Slope	    0.50  0.45    0.13
310: Parkelei	     80	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	
312: Bluewater	     90 	    Very limited   Flooding	1.00	    Not limited   	       	    Not limited   	     
315: Flugle	   50 	  Somewhat limited   Dusty 	    0.50	  Somewhat limited   Dusty 	      0.50	  Somewhat limited   Dusty   Slope	  0.50  0.13
Fragua	   40   	  Somewhat limited   Too sandy 	    0.79 	  Somewhat limited   Too sandy 	    0.79 	  Somewhat limited   Slope   Too sandy	  0.87  0.79
316: Royosa	  -   80   	  Somewhat limited   Too sandy   Slope	    0.95  0.01	  Somewhat limited   Too sandy   Slope 	    0.95  0.01	    Very limited   Slope   Too sandy 	    1.00  0.95
317: Highdye	35	  Very limited   Depth to bedrock   Slope 	  1.00  0.37 	  Very limited   Depth to bedrock   Slope 	  1.00  0.37 	Very limited   Depth to bedrock   Slope   Content of large   stones	1.00
Evpark	30	  Somewhat limited   Dusty   	    0.50 	  Somewhat limited   Dusty   	    0.50   	  Somewhat limited   Depth to bedrock   Slope   Dusty	  0.90  0.87  0.50
Bryway	20   20	  Somewhat limited   Restricted   permeability   	  0.41       	  Somewhat limited   Restricted   permeability   	  0.41         	  Somewhat limited   Depth to bedrock     Slope   Restricted   permeability	  0.95    0.87  0.41 

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit			   Picnic areas     		   Playgrounds   	
	     		Value	Rating class and   limiting features		Rating class and   limiting features	Value
320: Parkelei	     45 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	      0.50
Fraguni	40	  Somewhat limited   Too sandy 	    0.92 	  Somewhat limited   Too sandy 	    0.92 	  Somewhat limited   Too sandy   Slope	    0.92  0.50
325: Venzuni	   90         	  Very limited   Flooding   Too clayey     Restricted   permeability	    1.00  0.50    0.45	  Somewhat limited   Too clayey   Restricted   permeability	    0.50  0.45   	  Somewhat limited   Too clayey   Restricted   permeability   Slope	    0.50  0.45    0.01
332: Evpark	50	  Not limited 	       	  Not limited 	     	  Somewhat limited   Slope   Depth to bedrock	0.50
Arabrab	40   40     	  Very limited   Depth to bedrock   		  Very limited   Depth to bedrock   		Very limited   Depth to bedrock   Slope   Content of large   stones	0.50
335: Venadito	   85         	  Very limited   Flooding   Too clayey     Restricted   permeability	    1.00  0.50    0.45	!	    0.50  0.45    0.40	  Very limited   Flooding   Too clayey     Restricted   permeability   Slope	  1.00  0.50    0.45 
336: Nuffel Venadito	į	  Very limited    Very limited   Flooding	1.00	  Somewhat limited    Somewhat limited   Too clayey	0.50	  Very limited    Very limited   Flooding	1.00
	       	Too clayey Restricted permeability	0.50    0.45   	Restricted   permeability   Flooding   	0.45    0.40   	Too clayey Restricted permeability Slope	0.50    0.45    0.01
338: Zyme	   50         	  Very limited   Depth to bedrock   Slope   Restricted   permeability	  1.00  1.00  0.41 	  Very limited   Depth to bedrock   Slope   Restricted   permeability		Very limited Depth to bedrock Slope Restricted permeability	  1.00  1.00  0.41 

Table 9a.--Recreation--Continued

and soil name	  Pct.   of  map  unit	-   		Picnic areas		Playgrounds   	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
338: Lockerby	   40         	Restricted permeability	    0.45    0.16 	permeability	    0.45    0.16 	Depth to bedrock	    1.00    0.80  0.45
345: Rock outcrop	1 40	Not rated		    Not rated		    Not rated	
Tuces	İ	  Very limited   Slope   Gravel content	  1.00  0.97  0.41	  Very limited   Slope   Gravel content   Restricted   permeability	  1.00  0.97  0.41	Very limited   Gravel content   Slope   Content of large   stones   Depth to bedrock	į
350: Toldohn	   35         	Depth to bedrock		Slope		Depth to bedrock   Restricted   permeability	0.41
Vessilla	   30       	Depth to bedrock				Slope   Content of large   stones	1.00
Rock outcrop	20	  Not rated	 	  Not rated	 	  Not rated	
351: Rock outcrop	     60 	    Not rated 	     	    Not rated 	     	    Not rated 	     

Table 9a.--Recreation--Continued

and soil name	Pct. of map unit	 		Picnic areas     		Playgrounds     	
	   	Rating class and   limiting features	1	Rating class and   limiting features	1	Rating class and   limiting features	Value 
351: Vessilla	   30       	  Very limited   Depth to bedrock   Slope 		-		Slope   Content of large   stones	1.00
352: Zia	     80 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	0.13
353: Mido	     90   	  Somewhat limited   Too sandy 	0.44	  Somewhat limited   Too sandy 	      0.44 	  Somewhat limited   Too sandy   Slope	0.44
354: Knifehill	   80     	  Somewhat limited   Restricted   permeability	    0.41   	  Somewhat limited   Restricted   permeability	    0.41   	  Somewhat limited   Restricted   permeability   Slope	0.41
355: Rizno	   35     	! -		Depth to bedrock		! -	  1.00  1.00  0.22
Tekapo	   30   	! -		  Very limited   Depth to bedrock   Slope 	1	  Very limited   Slope   Depth to bedrock   Gravel content	  1.00  1.00  0.78
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
357: Heshotauthla	   85         	1 -	  1.00  1.00  0.50    0.45	  Very limited   Sodium content   Too clayey   Restricted   permeability	  1.00  0.50  0.45 	  Very limited   Sodium content   Flooding   Too clayey     Restricted   permeability	  1.00  0.60  0.50    0.45
360: Hosta	   45         	  Somewhat limited   Dusty   Restricted   permeability	  0.50  0.41 	  Somewhat limited   Dusty   Restricted   permeability	  0.50  0.41 	  Somewhat limited   Dusty   Restricted   permeability   Slope	  0.50  0.41    0.13

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	-   		Picnic areas		   Playgrounds   	
	     		Value	Rating class and   limiting features			Value
360: Concho	   40     	  Very limited   Flooding     Restricted   permeability	    1.00    0.41	  Somewhat limited   Restricted   permeability 	      0.41   	  Somewhat limited   Restricted   permeability 	      0.41   
361: Monpark	   80           	  Somewhat limited   Too clayey   Restricted   permeability 	    0.50  0.45   	!	    0.50  0.45     	! -	    0.71  0.50    0.50  0.45
365: Vessilla	   55     	  Very limited   Depth to bedrock   Slope			:		    1.00  1.00  0.22
Rock outcrop	   35 	  Not rated 	   	  Not rated	   	  Not rated 	   
366: Bosonoak	   95   	  Somewhat limited   Dusty 	      0.50	  Somewhat limited   Dusty	      0.50	  Somewhat limited   Dusty   Slope	0.50
367: Chunkmonk	   85         	  Very limited   Depth to bedrock   Gravel content   		! -	:	Very limited   Gravel content   Depth to bedrock   Slope   Content of large   stones	1.00
368: Simitarq	   60         		    1.00     	  Very limited   Depth to bedrock   	    1.00     	  Very limited   Depth to bedrock   Slope   Gravel content   Content of large   stones	0.87
Celavar	   20   	  Not limited   	       	  Not limited   	       	  Somewhat limited   Slope   Depth to bedrock	    0.87  0.35

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	of   map		   Picnic areas   		   Playgrounds   	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   
375: Todest	     60 	    Not limited   	       	    Not limited   	         	  Somewhat limited   Slope   Depth to bedrock	    0.87  0.84
Shadilto	   25         	  Very limited   Depth to bedrock   Gravel content 	  1.00  1.00   	! -	:	Very limited   Gravel content   Depth to bedrock   Slope   Content of large   stones	0.87
376: Todest	     80   	  Not limited   	       	  Not limited 	       	  Somewhat limited   Depth to bedrock   Slope	0.90
380: Berryhill	   50       	  Somewhat limited   Too clayey   Restricted   permeability 	    0.50  0.45   	  Somewhat limited   Too clayey   Restricted   permeability	    0.50  0.45 	  Somewhat limited   Slope   Too clayey     Restricted   permeability	    0.87  0.50    0.45
Casamero	   45         	Very limited Depth to bedrock Too clayey Restricted permeability	  1.00  0.50  0.45 	Too clayey	:	Very limited   Depth to bedrock   Slope   Too clayey   Restricted   permeability	  1.00  1.00  0.50    0.45
385: Mcorreon	   65         	Very limited   Slope   Gravel content   Restricted   permeability   Content of large   stones	    1.00  0.75  0.41    0.20		1.00  0.75  0.41	Very limited   Gravel content   Slope   Content of large   stones   Restricted   permeability	   1.00  1.00  1.00   1.00   0.41
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	
390: Banquito	   90     	  Not limited   	       	  Not limited   	       	  Somewhat limited   Gravel content   Slope 	  0.18  0.01

Table 9a.--Recreation--Continued

Map symbol and soil name	Pct.   of  map  unit	-   		   Picnic areas   		   Playgrounds   	
	     		Value		1		Value
395: Cabezon	   60     	  Very limited   Depth to bedrock   Gravel content   Restricted   permeability		Gravel content		Gravel content	1.00
Mcorreon	   30           	  Somewhat limited   Restricted   permeability   	  0.41         	  Somewhat limited   Restricted   permeability   	  0.41         	Somewhat limited   Slope     Restricted   permeability   Gravel content   Content of large   stones	  0.87    0.41    0.15  0.01
400: Shoemaker	   45         	!	      0.79     	  Somewhat limited   Too sandy   	      0.79     	  Somewhat limited   Slope   Too sandy   Depth to bedrock   Content of large   stones	
Stozuni	   35   	  Very limited   Depth to bedrock 		  Very limited   Depth to bedrock 		  Very limited   Depth to bedrock   Slope	  1.00  0.87
403: Valnor	   50       	  Somewhat limited   Restricted   permeability   Slope 	    0.41    0.01 	  Somewhat limited   Restricted   permeability   Slope 	0.41		  1.00    0.41    0.16
Techado	30	Restricted permeability		Restricted permeability		Gravel content Slope Too clayey	  1.00  1.00  1.00  0.50    0.41
404: Rock outcrop	     35 	    Not rated 	     	    Not rated 	     	    Not rated 	     

Table 9a. -- Recreation -- Continued

Map symbol and soil name	Pct. of map unit	-   		   Picnic areas   		   Playgrounds   	
	     		Value	Rating class and   limiting features			Value
404: Techado	   35             	   Very limited   Depth to bedrock   Slope   Restricted   permeability   Gravel content	   1.00  1.00  0.41   0.11	Slope   Restricted   permeability		Very limited Depth to bedrock Gravel content Slope Restricted permeability Content of large stones	1.00  1.00      0.41
Stozuni	   25           	  Very limited   Depth to bedrock   Slope   Gravel content 	  1.00  0.16  0.08 	Slope		  Very limited   Depth to bedrock   Gravel content   Slope   Content of large   stones	1.00
405: Fortwingate	   50       	  Somewhat limited   Restricted   permeability   	    0.41     	  Somewhat limited   Restricted   permeability 	    0.41     	Somewhat limited   Slope     Depth to bedrock   Restricted   permeability	  0.87    0.80  0.41
Owlrock	   35           	  Very limited   Depth to bedrock   Gravel content   Content of large   stones	0.93	Gravel content	1.00  0.93	  Very limited   Gravel content   Depth to bedrock   Content of large   stones   Slope	
406: Polich	   90 	  Very limited   Flooding	    1.00	  Somewhat limited   Flooding	    0.40	  Very limited   Flooding	    1.00
407: Cinnadale	   50         	  Very limited   Depth to bedrock   Gravel content   Slope 	  1.00  1.00  0.16		  1.00  1.00  0.16	Very limited   Gravel content   Depth to bedrock   Slope   Content of large   stones	1.00
Heckly	   35             	  Very limited   Gravel content   Slope   Restricted   permeability 	  1.00  1.00  0.41   	   Very limited   Gravel content   Slope   Restricted   permeability	  1.00  1.00  0.41   	Very limited   Gravel content   Slope   Content of large   stones   Restricted   permeability   Depth to bedrock	  0.41 

Table 9a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	 		Picnic areas     		   Playgrounds   	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features		Rating class and   limiting features	Value   
408: Mirabal	     50	    Very limited   Slope	1	    Very limited   Slope	      1.00	    Very limited   Slope   Depth to bedrock	      1.00  0.46
Zuni	40   40	  Somewhat limited   Restricted   permeability   Slope 	1	  Somewhat limited   Restricted   permeability   Slope 	  0.41    0.01 		  1.00    0.71  0.41
409: Rauster	     60 	    Very limited   Slope	1.00	    Very limited   Slope	1   1.00	    Very limited   Slope	1.00
Rock outcrop	30	  Not rated		  Not rated		  Not rated	
410: Montillo	   50           	  Somewhat limited   Restricted   permeability   Slope   Gravel content	   0.41   0.16   0.02 	permeability   Slope	   0.41   0.16   0.02 	Gravel content	
Tsoodzil	   40     	  Very limited   Gravel content   Slope   Restricted   permeability	  1.00  1.00  0.41	Slope	  1.00  1.00  0.41	  Very limited   Gravel content   Slope   Restricted   permeability	  1.00  1.00  0.41
411: Ligocki	45	  Somewhat limited   Restricted   permeability	    0.41 	  Somewhat limited   Restricted   permeability	    0.41 	  Somewhat limited   Restricted   permeability   Slope	0.41
Robolata	   35       	  Very limited   Flooding     Restricted   permeability	  1.00    0.41 		  0.41         	Somewhat limited   Flooding	  0.60    0.41    0.13
412: Rock outcrop	   50 	  Not rated 	   	  Not rated 	   	  Not rated 	   

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	-   		Picnic areas		Playgrounds   	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	1
412: Rionutria	     25       	Content of large   stones   Slope		stones Slope		stones   Slope	  1.00  1.00
Zaster	25           	  Very limited   Slope   Gravel content   Content of large   stones	1.00  0.99	Gravel content	1.00  0.99	Slope	İ
413: Morclay	   85       	  Somewhat limited   Too clayey   Restricted   permeability	    0.50  0.45   		  0.50  0.45 		  0.50  0.45    0.13
414: Zunalei	   50 	'		  Somewhat limited   Too sandy	      0.92	  Somewhat limited   Too sandy   Slope	  0.92  0.87
Corzuni	40	  Not limited 	 	  Not limited 	   	  Somewhat limited   Slope	0.87
415: Tsoodzil	   60           	Slope	1.00  0.41 	Restricted   permeability	1.00  0.41 	Content of large   stones	  1.00  1.00    0.96    0.41
Rubble Land	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
416: Rock outcrop	   70 	  Not rated 	   	    Not rated 	   	    Not rated 	

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	-   		Picnic areas     		   Playgrounds   	
	     		Value	Rating class and   limiting features	Value		Value
416: Bluesky	   20   	  Very limited   Depth to bedrock   Too sandy   Slope			1.00	  Very limited   Depth to bedrock   Too sandy   Slope	    1.00  1.00  1.00
418: Asaayi	   40 	  Very limited   Depth to bedrock   Slope			1	  Very limited   Depth to bedrock   Slope	1.00
Osoridge	   35               	  Very limited   Depth to bedrock   Gravel content   Restricted   permeability   Slope		Gravel content	1	Very limited   Gravel content   Depth to bedrock   Slope   Restricted   permeability   Content of large   stones	1.00
419: Fortwingate	   35       	  Very limited   Slope     Content of large   stones	1.00	į	1.00	  Very limited   Content of large   stones   Slope	    1.00    1.00
	         	   Restricted   permeability   	  0.41       	Restricted permeability	  0.41       	Depth to bedrock   Restricted   permeability   Gravel content	  0.80    0.41    0.06
Cinnadale	30	Very limited   Depth to bedrock	1.00	Content of large stones	1.00    0.94	stones	İ
Rock outcrop	20	  Not rated 	   	  Not rated 	   	  Not rated 	
420: Seco	   85       	  Very limited   Flooding     Restricted   permeability	  1.00    0.45 	  Somewhat limited   Restricted   permeability 	    0.45       	  Somewhat limited   Restricted   permeability   Slope	  0.45    0.13 

Table 9a. -- Recreation -- Continued

Map symbol and soil name	Pct.  of  map  unit	 		Picnic areas		Playgrounds		
	     		Value		Value		Value	
425: Montillo	     50 	    Somewhat limited   Restricted   permeability	        0.41	  Somewhat limited   Restricted   permeability	        0.41	    Somewhat limited   Slope 	0.50	
	     	 	       	 	       	Restricted permeability Depth to bedrock Content of large stones	1	
Canoneros	   35           	   Very limited   Depth to bedrock   Restricted   permeability 	  1.00  0.41     	   Very limited   Depth to bedrock   Restricted   permeability 	  1.00  0.41     	Very limited   Depth to bedrock   Content of large   stones   Gravel content   Slope   Restricted   permeability	1	
430: Montillo	   80         	  Somewhat limited   Restricted   permeability 	    0.41       	  Somewhat limited   Restricted   permeability 	    0.41       	Somewhat limited   Slope	1	
435: Tsoodzil	   50         	  Very limited   Slope   Gravel content   Restricted   permeability	    1.00  0.79  0.41 	  Very limited   Slope   Gravel content   Restricted   permeability	    1.00  0.79  0.41 	  Very limited   Gravel content   Slope   Restricted   permeability   Content of large   stones	  1.00  1.00  0.41    0.38	
Amcec	   40       	  Very limited   Gravel content   Slope   	  1.00  1.00   	  Very limited   Gravel content   Slope   	  1.00  1.00 	  Very limited   Gravel content   Slope   Content of large   stones	  1.00  1.00  0.26	
440: Chivato	   90         	  Very limited   Ponding   Too clayey   Restricted   permeability	  1.00  0.50  0.45	  Very limited   Ponding   Too clayey   Restricted   permeability	  1.00  0.50  0.45	  Very limited   Ponding   Too clayey   Restricted   permeability	  1.00  0.50  0.45	

Table 9a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	 		   Picnic areas   		Playgrounds	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   		Value 
525: Silcat	     85       	  Somewhat limited   Restricted   permeability	0.45	  Somewhat limited   Restricted   permeability	0.45	  Somewhat limited   Slope     Restricted   permeability	      0.87    0.45
550: Bryway	   50         	  Somewhat limited   Dusty   Restricted   permeability	    0.50  0.41   	  Somewhat limited   Dusty   Restricted   permeability	    0.50  0.41   	  Somewhat limited   Slope   Dusty     Restricted   permeability   Depth to bedrock	    0.50  0.50    0.41 
Galzuni	   35       	  Somewhat limited   Dusty   Restricted   permeability	  0.50  0.41 	  Somewhat limited   Dusty   Restricted   permeability	  0.50  0.41 	Somewhat limited   Slope   Dusty   Restricted   permeability	    0.50  0.50    0.41
555: Parkelei	     45 	    Not limited   	       	    Not limited   	       	    Somewhat limited   Slope 	      0.87
Evpark	35	Not limited   	   	Not limited   	   	Somewhat limited   Slope   Depth to bedrock	  0.87  0.10
560: Flugle	     45 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	0.13
Teczuni	35     	Somewhat limited   Restricted   permeability	0.41	Somewhat limited   Restricted   permeability	0.41	Somewhat limited   Restricted   permeability   Slope	0.41
561: Flugle	     50 	    Not limited 		    Not limited 		    Somewhat limited   Slope	0.87
Plumasano	   40 	  Not limited   	     	  Not limited   	     	  Somewhat limited   Slope 	    0.87
565: Plumasano	   65 	  Very limited   Slope 	    1.00 	  Very limited   Slope	    1.00 	  Very limited   Slope 	1.00

Table 9a.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	Camp areas     		Picnic areas     		Playgrounds	
	     	Rating class and limiting features	Value   	Rating class and   limiting features	Value     	Rating class and limiting features	Value
565: Rock outcrop	     20 	    Not rated 	     	    Not rated 	     	    Not rated 	     
566: Bamac	   90       	  Very limited   Gravel content   Slope 	  1.00  1.00 	  Very limited   Gravel content   Slope   	  1.00  1.00 		  1.00  1.00  0.01
575: Ramah	     45 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	0.01
Pescado	   35       	  Very limited   Depth to bedrock   	    1.00     	  Very limited   Depth to bedrock   	    1.00     	  Very limited   Depth to bedrock   Slope 	  1.00  0.50 

Table 9b.--Recreation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	 	S	Off-road motorcycle trai	ls	   Golf fairways   	
	    -	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
8: Water	    -  100	    Not rated	     	    Not rated	     	    Not rated	     
10: Tsosie	  -   35	  Not limited	     	    Not limited 	 	  Very limited   Sodium content	1.00
Councelor	-  30	  Not limited	 	  Not limited	 	  Not limited	
Blancot	 -  20 	  Not limited 	     	  Not limited 	   	  Somewhat limited   Droughty	0.20
11: Doakum	-  60	    Not limited	   	    Not limited		    Not limited	
Betonnie	 -  25 	  Not limited 	   	  Not limited 	 	  Somewhat limited   Droughty	0.02
12: Calladito	   -  55 	!	      0.96	    Somewhat limited   Too sandy	      0.96	    Somewhat limited   Droughty	      0.29
Elias	 -  30 	  Not limited   	     	  Not limited   	     	  Very limited   Sodium content   Droughty	1.00
13: Councelor	   -  60	    Not limited	   	    Not limited		    Not limited	
Calladito	-  30 		    0.96	  Somewhat limited   Too sandy	0.96	  Somewhat limited   Droughty	0.55
14: Councelor	-  30	    Not limited	   	    Not limited	   	    Not limited	
Eslendo	 -  30   	  Somewhat limited   Dusty   	    0.50 	  Somewhat limited   Dusty   	    0.50 	  Very limited   Depth to bedrock   Droughty   Slope	  1.00  0.98  0.96
Calladito	 -  25 	  Somewhat limited   Too sandy	    0.96	  Somewhat limited   Too sandy	    0.96	  Somewhat limited   Droughty	0.61
16: Starlake	  -   85     	    Somewhat limited   Too clayey   	      0.50   	    Somewhat limited   Too clayey   	      0.50   	  Very limited   Sodium content   Too clayey   Droughty	    1.00  1.00  0.01

Table 9b.--Recreation--Continued

Map symbol   Po and soil name   c   materials		 	Off-road   motorcycle trai 	ls	Golf fairways		
	     	Rating class and   limiting features		Rating class and   limiting features		   Rating class and   limiting features 	Value
22: Querencia	50	    Not limited		    Not limited		    Not limited	
Lavodnas	   35     		    0.50     	  Somewhat limited   Dusty     	    0.50     	Droughty	  1.00  1.00  0.01
30: Orlie	45	  Not limited	į Į	  Not limited	į Į	  Not limited	į Į
Tinian	40			  Somewhat limited   Dusty 	    0.50	  Somewhat limited   Depth to bedrock 	    0.90
40: Nuffel	90		    0.50  0.40		    0.50  0.40	  Very limited   Flooding 	1.00
42: Suwanee	90		    0.40	1	0.40	  Very limited   Flooding	1.00
44: Suwanee	90	Too clayey	0.50		0.50	· -	1.00
45: Nutreeah	90	    Not limited 	     	    Not limited 	     	    Not limited 	     
47: Conchovar	90	  Not limited	 	  Not limited	<u> </u> 	  Not limited	į Į
49: Concho	     85	    Not limited		    Not limited	   	    Not limited	   
51: Kwakina	90	  Somewhat limited   Too sandy	    0.87	  Somewhat limited   Too sandy	    0.87	  Somewhat limited   Flooding   Droughty	0.60
52: Zuniven	90	  Somewhat limited   Too sandy   Flooding	    0.92  0.40	  Somewhat limited   Too sandy   Flooding	    0.92  0.40	  Very limited   Flooding 	1.00
53: Hawaikuh	80	    Not limited	     	    Not limited	   	    Not limited	 
54: Venadito	90	  Somewhat limited   Too clayey 	      0.50 	  Somewhat limited   Too clayey 	      0.50 	  Very limited   Too clayey   Flooding	    1.00  0.60

Table 9b.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit			Off-road   motorcycle trai 	ls	Golf fairways	
	     	Rating class and limiting features		Rating class and   limiting features		Rating class and limiting features	Value
55: Sparham	     95 			    Somewhat limited   Flooding	      0.40	    Very limited   Flooding	      1.00
60: Redpen	     90 	    Not limited 	     	    Not limited 	   	    Not limited 	
100: Norkiki	   45 		    0.79 	  Somewhat limited   Too sandy	    0.79	! -	  0.65  0.02
Kimnoli	   40   	  Not limited   	     	  Not limited   	     	  Very limited   Depth to bedrock   Droughty	  1.00  1.00
110: Benally	     60	    Not limited 	     	  Not limited 	     	    Very limited   Sodium content	1.00
Fruitland	25	!	    0.94	  Somewhat limited   Too sandy	    0.94	  Not limited 	
111: Yelives	     85	    Not limited	     	    Not limited	   	    Not limited 	     
115: Razito	45		      0.79	  Somewhat limited   Too sandy	0.79	    Somewhat limited   Droughty	0.69
Shiprock	40	  Not limited 	   	  Not limited 	   	  Not limited 	   
116: Fajada	   30       	  Not limited     	         	  Not limited     	         	1	  1.00  0.96  0.65  0.18
Huerfano	   30     	  Somewhat limited   Dusty   	    0.50   	  Somewhat limited   Dusty   	    0.50   	  Very limited   Depth to bedrock   Sodium content   Droughty	  1.00  1.00  1.00
Benally	   25   	  Not limited   	       	  Not limited   	       	  Very limited   Sodium content   Droughty	    1.00  0.29
118: Farb	35	  Not limited     	       	  Not limited     	         	  Very limited   Depth to bedrock   Droughty 	    1.00  1.00

Table 9b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	 	Paths and trails		ls	Golf fairways	
	     						Value
118: Chipeta	   30       	!	      0.50   	  Somewhat limited   Too clayey   	      0.50     	  Very limited   Depth to bedrock   Salinity   Droughty   Too clayey   Slope	   1.00  1.00  1.00  1.00  0.63
Rock outcrop	   25 	  Not rated 	   	  Not rated 	   	  Not rated 	   
120: Doak	   55	  Not limited	 	  Not limited	 	  Not limited	
Shiprock	ĺ	  Somewhat limited	    0.92	  Somewhat limited   Too sandy	    0.92	  Not limited 	 
121: Badland	     90	    Not rated 	     	    Not rated 	     	    Not rated 	     
122: Farb	   45   			  Very limited   Gravel content 	    1.00 	  Very limited   Depth to bedrock   Gravel content   Droughty	  1.00  1.00  1.00
Rock outcrop	   45 	  Not rated 	   	  Not rated 	   	  Not rated 	   
125: Sanfeco	   75	    Not limited 	   	    Not limited	 	    Not limited 	   
130: Chipeta	   40     	Dusty	  0.50  0.02 	! -	    0.50   	Slope	  1.00  1.00  1.00  0.08
Badlands	30	  Not rated	 	  Not rated	 	  Not rated	
Moncisco	   15         		  1.00  0.68   	  Very limited   Gravel content     	    1.00       	Very limited   Gravel content   Droughty   Slope   Content of large   stones	  1.00  1.00  1.00  0.01
150: Riverwash	   65     	  Very limited   Too sandy   Flooding 	      1.00  0.40 	  Very limited   Too sandy   Flooding 	      1.00  0.40 	  Very limited   Flooding   Droughty   Too sandy	    1.00  1.00  0.50

Table 9b.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 	Paths and trails		ls	   Golf fairways   	
	     	Rating class and   limiting features	Value	Rating class and   limiting features			Value
150: Escawetter	     25   	!	0.44		      0.44  0.40	  Very limited   Flooding   Droughty	    1.00  0.49
160: Escawetter	40	Too sandy	1.00	! -	    1.00  0.40	!	1.00
Riverwash	35     	Too sandy	  1.00  0.40	! -	 	!	  1.00  1.00  0.50
Razito	15	! -	    1.00	  Very limited   Too sandy	    1.00	  Somewhat limited   Droughty	0.92
205: Penistaja	     45	    Not limited	     	    Not limited	     	    Not limited	
Tintero	40	  Not limited 	i I	  Not limited 	i I	  Not limited 	 
208: Marianolake	   85 	    Not limited 	     	    Not limited 	   	    Not limited 	
210: Marianolake	   50 	  Not limited 	   	  Not limited 	   	  Not limited 	   
Skyvillage	30	Not limited	         	Not limited	 	Very limited   Depth to bedrock   Droughty   Gravel content   Content of large   stones	1.00
212: Rehobeth	   90     	  Very limited   Ponding 	    1.00 	  Very limited   Ponding 	    1.00 	  Very limited   Ponding   Flooding	  1.00  0.60
215: Viuda	   35         	  Somewhat limited   Content of large   stones 		  Somewhat limited   Content of large   stones 		Very limited   Depth to bedrock     Content of large   stones   Droughty   Gravel content	į
Penistaja	30	  Not limited 	   	  Not limited 	   	  Not limited 	   
Rock outcrop	25	  Not rated 	   	  Not rated 	 	  Not rated 	

Table 9b.--Recreation--Continued

Map symbol   F and soil name     m   u		 	S	Off-road   motorcycle trai 	ls	   Golf fairways     	
	     		Value	Rating class and   limiting features			Value
220: Hagerwest	50	    Not limited	     	    Not limited	 	  Somewhat limited   Depth to bedrock	0.10
Bond	   35   	  Not limited   	       	  Not limited   	     	  Very limited   Depth to bedrock   Droughty	  1.00  1.00
225: Aquima	40		      0.50	  Somewhat limited   Dusty	0.50	    Not limited   	
Hawaikuh	40	1	    0.50	1	0.50	  Not limited   	     
230: Sparank	40	    Not limited 	   	    Not limited 		    Somewhat limited   Flooding	0.60
San Mateo	35	  Not limited 	   	  Not limited 	   	  Somewhat limited   Flooding	0.60
Zia	20	  Not limited	 	  Not limited	   	  Not limited	
235: Notal	45	!	      0.50	  Somewhat limited   Dusty	0.50	  Very limited   Sodium content	1.00
Hamburn	40	  Not limited 	   	  Not limited 		  Somewhat limited   Flooding	0.60
240: Breadsprings	35	! -	      1.00  0.50	-	1.00	  Very limited   Ponding	1.00
Nahodish	35	! -	    1.00  0.50	-	  1.00  0.50	  Very limited   Ponding   	1.00
241: Mentmore	   85 			    Somewhat limited   Dusty 	0.50	    Not limited   	
242: Gish	45	  Not limited	   	  Not limited	<u> </u>	    Not limited	
Mentmore	35	  Not limited	   	  Not limited		  Not limited	
244: Buckle	     85 	    Not limited 	     	    Not limited 	     	    Not limited 	

Table 9b.--Recreation--Continued

and soil name	  Pct.   of  map  unit	of		   Off-road   motorcycle trai   	ls	Golf fairways	
	     		Value	Rating class and   limiting features			Value
245: Buckle	     35	    Not limited	   	    Not limited	   	    Not limited	
Gapmesa	   30 	  Not limited 	   	  Not limited 	   	  Somewhat limited   Depth to bedrock	0.35
Barboncito	   25   		    0.94 	  Somewhat limited   Too sandy 	    0.94 	  Very limited   Depth to bedrock   Droughty	  1.00  1.00
250: Hospah	   35         	Somewhat limited   Content of large   stones   Slope 	!	  Somewhat limited   Content of large   stones 	1	  Very limited   Depth to bedrock     Droughty   Content of large   stones   Slope   Gravel content	1.00
Skyvillage	   30       	  Not limited         	           	  Not limited         	           	Very limited   Depth to bedrock   Droughty   Gravel content   Content of large   stones	  1.00  1.00  0.68
Rock outcrop	   25 	  Not rated 	   	  Not rated 	   	  Not rated 	   
255: Farview	   50   		    0.89 	  Somewhat limited   Too sandy 	    0.89 	  Very limited   Depth to bedrock   Droughty   Slope	  1.00  0.94  0.01
Rock outcrop	   35 	  Not rated 	   	  Not rated 	   	  Not rated 	   
258: Eagleye		'	    0.50 	  Not limited   	 	  Very limited   Depth to bedrock   Droughty   Slope	  1.00  1.00  1.00
Atchee	   35   	  Not limited   	     	  Not limited   	     	  Very limited   Depth to bedrock   Droughty	  1.00  1.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   

Table 9b. -- Recreation -- Continued

Map symbol and soil name	  Pct.   of  map  unit		Paths and trails		ls	   Golf fairways   	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features			Value   
260: Quarries and Pits	       95	    Not rated	     	    Not rated	     	    Not rated	
261: Coal Mine Lands	    100	    Not rated 	   	    Not rated 	 	    Not rated 	     
265: Uranium Mined Lands-	     95	    Not rated 	     	    Not rated 	   	    Not rated 	     
270: Alesna	   70         	Slope	1.00  0.50 	Slope	0.50 0.44	Content of large   stones	  1.00  1.00    0.61
Rock outcrop	   20	  Not rated	   	  Not rated		  Not rated 	   
275: Eldado	     85 	  Not limited 	       	  Not limited 	     	!	0.62
280: Azabache	     85     			  Very limited   Gravel content 	      1.00   	Sodium content	    1.00  1.00  0.54
290: Rock outcrop	     45	    Not rated	   	    Not rated	   	    Not rated	   
Westmion	   30         		    1.00       	  Very limited   Slope     	    1.00       	Slope	1.00  0.98
Skyvillage	   15         	  Not limited       	         	  Not limited       	           	Very limited   Depth to bedrock   Droughty   Content of large   stones	1.00
291: Rock outcrop	     50	    Not rated 	     	    Not rated 	     	    Not rated 	     

Table 9b.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit		Paths and trails		ls	   Golf fairways   	
	     	   Rating class and   limiting features	Value   	Rating class and   limiting features		Rating class and   limiting features	Value   
291: Eagleye	   25 	    Very limited   Slope   	      1.00       	    Very limited   Slope   	      1.00       	Very limited   Depth to bedrock   Slope   Droughty   Gravel content   Content of large   stones	1.00  0.80  0.71
Atchee	   15           	  Not limited         	             	  Not limited         	 	Very limited   Depth to bedrock   Droughty   Gravel content   Slope   Content of large   stones	1.00  0.88  0.63
300: Regracic	   80 	  Not limited   	     	    Not limited   	     	    Somewhat limited   Gravel content 	    0.90
305: Celavar	   50 	  Somewhat limited   Dusty	    0.50	  Somewhat limited   Dusty	    0.50	  Somewhat limited   Depth to bedrock	0.35
Atarque	35 35	  Not limited   	     	Not limited 		Very limited   Depth to bedrock   Droughty	1.00
308: Fikel	     50	    Not limited 	     	    Not limited 	     	    Not limited 	     
Venzuni	40   	  Somewhat limited   Too clayey	  0.50	Somewhat limited   Too clayey	0.50	  Very limited   Too clayey 	1.00
310: Parkelei	   80 	  Not limited 	   	  Not limited 	i   	  Not limited 	   
312: Bluewater	90	  Not limited 	     	  Not limited 	   	  Not limited 	
315: Flugle	   50 	  Somewhat limited   Dusty	    0.50	  Somewhat limited   Dusty	0.50	    Not limited 	
Fragua	40	  Somewhat limited   Too sandy	    0.79	Somewhat limited   Too sandy	0.79	  Not limited 	   
316: Royosa	   80     	  Somewhat limited   Too sandy 	      0.95 	  Somewhat limited   Too sandy 	      0.95 	  Somewhat limited   Droughty   Slope 	    0.01  0.01

Table 9b.--Recreation--Continued

Map symbol and soil name	Pct.   of  map  unit	<u> </u> 	Off-road   motorcycle trai 	ls	Golf fairways		
	     			Rating class and   limiting features	1		Value
317: Highdye	   35     	    Not limited       	             	    Not limited       		  Very limited   Depth to bedrock   Droughty   Slope   Content of large   stones	1.00
Evpark	30		    0.50 	  Somewhat limited   Dusty 	0.50	  Somewhat limited   Depth to bedrock   Droughty	  0.90  0.01
Bryway	20	  Not limited   	     	  Not limited   	   	  Somewhat limited   Depth to bedrock   Droughty	  0.95  0.22
320: Parkelei	     45	    Not limited 	     	    Not limited 	     	    Not limited 	     
Fraguni	40	Somewhat limited   Too sandy	0.92	Somewhat limited   Too sandy	0.92	Not limited	<u> </u>
325: Venzuni	     90 	    Somewhat limited   Too clayey	      0.50	    Somewhat limited   Too clayey	      0.50	    Very limited   Too clayey	1.00
332: Evpark	50	    Not limited 	     	    Not limited 	 	    Somewhat limited   Depth to bedrock	0.06
Arabrab	   40     	  Not limited       	         	  Not limited       	         	  Very limited   Depth to bedrock   Droughty   Content of large   stones	0.73
335: Venadito	   85   	Too clayey	    0.50  0.40		0.50	  Very limited   Flooding   Too clayey	  1.00  1.00
336: Nuffel	45	  Somewhat limited   Dusty   Flooding	0.50	  Somewhat limited   Dusty   Flooding	0.50	  Very limited   Flooding	1.00
Venadito	   35   	  Somewhat limited   Too clayey   Flooding	    0.50  0.40	  Somewhat limited   Too clayey   Flooding 	  0.50  0.40	  Very limited   Too clayey   Flooding 	  1.00  1.00

Table 9b.--Recreation--Continued

	  Pct.   of  map  unit		s	Off-road motorcycle trai	ls	   Golf fairways   	
	     	Rating class and   limiting features					
338: Zyme	     50   	1	0.50	    Not limited   		  Very limited   Depth to bedrock   Slope   Droughty	    1.00  1.00  0.92
Lockerby	   40     	  Not limited     	       	  Not limited     	       	Somewhat limited   Depth to bedrock   Slope   Droughty	  0.80  0.16  0.01
345: Rock outcrop	40	  Not rated	<u> </u>	  Not rated	ļ !	  Not rated	 
Tuces	   40           	! -	1.00	! -	0.22		0.97
350: Toldohn	   35       	  Somewhat limited   Slope     	    0.50     	  Not limited       		  Very limited   Depth to bedrock   Droughty   Slope   Content of large   stones	1.00
Vessilla	   30       	  Not limited       	         	  Not limited       	         	  Very limited   Depth to bedrock   Droughty   Content of large   stones   Slope	1.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
351: Rock outcrop	   60	  Not rated	į Į	  Not rated	į Į	  Not rated	<u> </u> 
Vessilla	30           	  Not limited         	           	  Not limited         		  Very limited   Depth to bedrock   Droughty   Content of large   stones   Slope	1.00
352: Zia	   80 	    Not limited 	 	  Not limited 	   	  Not limited 	

Table 9b.--Recreation--Continued

Map symbol and soil name	Pct.   of  map  unit	 	Paths and trails   n		ls	Golf fairways	
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
353: Mido	90	    Somewhat limited   Too sandy	0.44	    Somewhat limited   Too sandy	0.44	    Somewhat limited   Droughty	
354: Knifehill	     80	    Not limited	   	    Not limited		    Not limited	
355: Rizno	35	  Not limited     		  Not limited   	       	  Very limited   Depth to bedrock   Droughty   Slope	  1.00  1.00  0.16
Tekapo	30	  Very limited   Slope   	    1.00   	  Somewhat limited   Slope   	    0.22   	  Very limited   Depth to bedrock   Droughty   Slope	  1.00  1.00  1.00
Rock outcrop	20	  Not rated 		  Not rated 	   	  Not rated 	
357: Heshotauthla	   85       	  Somewhat limited   Too clayey   	    0.50     	  Somewhat limited   Too clayey 	    0.50     	  Very limited   Sodium content   Too clayey   Flooding   Droughty	  1.00  1.00  0.60  0.01
360: Hosta	45	  Somewhat limited   Dusty	0.50	  Somewhat limited   Dusty	0.50	    Not limited 	
Concho	40	  Not limited	   	  Not limited	   	  Not limited	
361: Monpark	     80 	  Somewhat limited   Too clayey	0.50	  Somewhat limited   Too clayey	0.50	  Very limited   Too clayey   Depth to bedrock	1.00
365: Vessilla	   55   	  Not limited   	       	  Not limited   	         	  Very limited   Depth to bedrock   Droughty   Slope	    1.00  0.99  0.01
Rock outcrop	35	  Not rated		  Not rated		  Not rated	
366: Bosonoak	     95 	    Somewhat limited   Dusty 	      0.50	    Somewhat limited   Dusty 	      0.50	    Not limited   	     

Table 9b.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 	Paths and trails		ls	   Golf fairways   	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
367: Chunkmonk	   85       	    Not limited       	             	  Not limited     	             	Very limited   Depth to bedrock   Droughty   Gravel content   Content of large   stones	1.00
368: Simitarq	   60       	  Not limited     	           	  Not limited   	         	  Very limited   Depth to bedrock   Droughty   Content of large   stones	1.00
Celavar	   20   	  Not limited   	     	  Not limited   	     	  Somewhat limited   Depth to bedrock 	0.35
375: Todest	   60     	  Not limited     	       	  Not limited   	 	  Very limited   Carbonate content   Depth to bedrock   Droughty	
Shadilto	   25           	  Not limited           	             	  Not limited           	             	!	1.00  1.00  1.00
376: Todest	   80	    Not limited	į į	  Not limited	į į	    Very limited	j I
380: Berryhill	į	İ	    0.50	  Somewhat limited	0.50	  Very limited	1.00
Casamero	   45       	  Somewhat limited   Too clayey   	    0.50   	  Somewhat limited   Too clayey   	    0.50   	  Very limited   Too clayey   Depth to bedrock   Droughty	  1.00  1.00  0.84
385: Mcorreon	   65     	  Very limited   Slope     Content of large   stones	1.00	stones		stones   Slope 	1.00
Rock outcrop	     20 	    Not rated 	     	    Not rated 	     	Gravel content    Not rated 	0.75     

Table 9b.--Recreation--Continued

Map symbol and soil name	Pct.   Paths and trails we   of     map     unit		S	Off-road   motorcycle trai 	ls	Golf fairways     	
	     	Rating class and limiting features	Value	Rating class and   limiting features		Rating class and limiting features	Value
390: Banquito	90	    Not limited 	       	    Not limited 	       	    Somewhat limited   Depth to bedrock	      0.06
395: Cabezon	   60     	  Somewhat limited   Content of large   stones 	    0.18   	  Somewhat limited   Content of large   stones 	:	Content of large stones	1.00
Mcorreon	       30   	    Not limited   	         	    Not limited   	         	Droughty   Gravel content    Somewhat limited   Content of large   stones	0.99  0.79        0.01
400: Shoemaker	   45     	1	      0.79   	  Somewhat limited   Too sandy 	      0.79 	  Somewhat limited   Depth to bedrock   Content of large   stones	
Stozuni	   35   	  Not limited   	     	  Not limited   	     	  Very limited   Depth to bedrock   Droughty	  1.00  1.00
403: Valnor	     50 	    Not limited   	       	    Not limited   	       	    Somewhat limited   Depth to bedrock   Slope	    0.16  0.01
Techado	   30 	!	    0.50	  Somewhat limited   Too clayey 	    0.50	  Very limited   Depth to bedrock	    1.00
Rock outcrop	35	Not rated	İ	Not rated	į	Not rated	į
Techado	35         	:	  1.00         	  Somewhat limited   Slope     	  0.01         	Very limited   Depth to bedrock   Slope   Droughty   Gravel content   Content of large   stones	1.00  0.77  0.11
Stozuni	   25         	  Not limited           	             	  Not limited           	             	Very limited   Depth to bedrock   Droughty   Slope   Gravel content   Content of large   stones	1.00  0.16  0.08

Table 9b.--Recreation--Continued

Map symbol and soil name	  Pct.   of  map  unit	 	Paths and trails		ls	   Golf fairways   	
	     		Value	Rating class and   limiting features			Value
405: Fortwingate	     50 	    Not limited   	       	    Not limited   	       	  Somewhat limited   Depth to bedrock   Droughty	0.80
Owlrock	   35   	  Somewhat limited   Content of large   stones	    0.02 	  Somewhat limited   Content of large   stones		  Very limited   Depth to bedrock     Droughty	  1.00    1.00
	       	    -  -	     	     	     	Content of large   stones   Gravel content	1
406: Polich	   90 	  Somewhat limited   Flooding 	    0.40	  Somewhat limited   Flooding 	    0.40	  Very limited   Flooding 	1.00
407: Cinnadale	   50       	  Not limited         	             	  Not limited         	 	Very limited   Depth to bedrock   Droughty   Gravel content   Slope   Content of large   stones	1.00  1.00  0.16
Heckly	   35         	  Very limited   Slope       	  1.00         	  Somewhat limited   Slope     	  0.01       	  Very limited   Gravel content   Slope   Content of large   stones   Depth to bedrock	į
408: Mirabal	   50     	  Somewhat limited   Slope 	    0.50   	  Not limited   	       	  Very limited   Droughty   Slope   Depth to bedrock	  1.00  1.00  0.46
Zuni	   40     	  Not limited   	         	  Not limited   	       	  Somewhat limited   Depth to bedrock   Droughty   Slope	
409: Rauster	     60 	  Somewhat limited   Slope	0.50	    Not limited 		  Very limited   Slope	1.00
Rock outcrop	30	  Not rated 	   	  Not rated 	   	  Not rated 	

Table 9b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit		Paths and trails		ls	   Golf fairways   	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features			Value   
410: Montillo	     50       	    Not limited       	           	    Not limited       	             		0.16
Tsoodzil	   40 	1	    0.50	  Not limited   	     	  Very limited   Gravel content   Slope	  1.00  1.00
411: Ligocki	45	    Not limited	   	  Not limited	 	    Not limited	
Robolata	   35 	  Not limited 	   	  Not limited 	 	  Somewhat limited   Flooding	0.60
412: Rock outcrop	     50	    Not rated	   	    Not rated	   	    Not rated	
Rionutria	   25         	  Somewhat limited   Content of large   stones 		  Somewhat limited   Content of large   stones 		  Very limited     Content of large     stones     Depth to bedrock     Droughty     Slope     Gravel content	į
Zaster	   25           	  Very limited   Slope   Content of large   stones	1.00				  0.99  0.97
413: Morclay	     85 		        0.50	    Somewhat limited   Too clayey		    Very limited	1 1.00
414: Zunalei	   50 	'	      0.92	!	      0.92	  Not limited 	   
Corzuni	   40 	  Not limited 	   	  Not limited 	   	  Not limited 	

Table 9b.--Recreation--Continued

and soil name	Pct. of map unit	 	Paths and trails		ls	Golf fairways	Golf fairways		
	     					Rating class and limiting features	Value		
415: Tsoodzil	     60   	! -	1.00	stones		stones	    1.00    1.00		
Rubble Land	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   		
416: Rock outcrop Bluesky	İ	İ	     	    Not rated    Very limited	į	  Not rated    Very limited	       		
	     		1.00		1.00     	Depth to bedrock Droughty	1.00  1.00  0.16		
418: Asaayi	   40   	  Not limited   	       	  Not limited   	 		  1.00  0.77  0.01		
Osoridge	   35       	  Not limited         	             	  Not limited         	             	Gravel content Content of large stones	0.79 0.71		
419: Fortwingate	     35	    Verv limited	   	    Somewhat limited	   	    Very limited	   		
1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	     	•	1.00	Content of large   stones		Content of large stones	1.00		
			İ	 	 	Depth to bedrock Droughty	0.80		
Cinnadale	   30 	•		  Somewhat limited   Content of large   stones		  Very limited   Depth to bedrock	    1.00 		
	   	 	   	 	   	Content of large   stones	1.00 		
	   	 		 		Droughty Slope	1.00		
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   		
420: Seco	   85 	  Not limited 	   	  Not limited 	   	  Not limited	   		

Table 9b. -- Recreation -- Continued

Map symbol and soil name	  Pct.   of  map  unit	of		Off-road   motorcycle trai 	ls	Golf fairways	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features	Value   	Rating class and   limiting features	Value
425: Montillo	   50     	    Not limited     	           	  Not limited     			0.04
Canoneros	35         	  Not limited       	           	  Not limited       	         	  Very limited   Depth to bedrock   Droughty   Content of large   stones	1.00
430: Montillo	   80     	  Not limited     	         	  Not limited     	         	Somewhat limited   Depth to bedrock   Content of large   stones	:
435: Tsoodzil	   50     		    1.00   	  Somewhat limited   Slope   	    0.01   	  Very limited   Slope   Gravel content   Content of large   stones	  1.00  0.79  0.38
Amcec	   40         		  1.00  1.00     	  Very limited   Gravel content   Slope   	  1.00  0.22   	!	  1.00  1.00  1.00  0.26
440: Chivato	   90   	, ,	    1.00  0.50	  Very limited   Ponding   Too clayey	    1.00  0.50	  Very limited   Too clayey   Ponding	  1.00  1.00
525: Silcat	     85	    Not limited	     	  Not limited		    Not limited	
550: Bryway	50	    Somewhat limited   Dusty	      0.50	  Somewhat limited   Dusty	0.50	    Somewhat limited   Depth to bedrock	0.29
Galzuni	35	  Somewhat limited   Dusty 	    0.50 	  Somewhat limited   Dusty 	0.50	  Not limited   	

Table 9b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit			Off-road motorcycle trai	ls	Golf fairways	
	   	Rating class and   limiting features	Value	Rating class and   limiting features	Value		Value
555: Parkelei	      45	    Not limited	   	    Not limited	 	    Not limited	   
Evpark	-  35	  Not limited 	   	  Not limited 	   	  Somewhat limited   Depth to bedrock	0.10
560: Flugle	     45	    Not limited	     	    Not limited	     	    Not limited	   
Teczuni	-  35	  Not limited		  Not limited		  Not limited	
561: Flugle	-  50	    Not limited	   	    Not limited	   	    Not limited	
Plumasano	- 40	  Not limited		  Not limited		  Not limited	
565: Plumasano	     65 		      1.00	    Somewhat limited   Slope 	      0.01	    Very limited   Slope 	      1.00
Rock outcrop	-   20	Not rated	j I	Not rated	į	Not rated 	į
566: Bamac	90	Gravel content	  1.00  1.00     		  1.00  0.01   	1	  1.00  1.00  1.00  0.01
575: Ramah	-  45	  Not limited	 	  Not limited	 	  Not limited	
Pescado	   35   	  Not limited     	       	  Not limited   	       	  Very limited   Depth to bedrock   Droughty	  1.00  0.73
	_						.

Table 10a.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	basements	ut	   Dwellings with   basements 		Small commercial   buildings 	
	     			Rating class and   limiting features		Rating class and   limiting features	Value
8: Water	100	      Not rated	       	      Not rated 			
10: Tsosie	35	  Very limited   Flooding	1   1.00	  Very limited   Flooding	1.00	  Very limited   Flooding	1.00
Councelor	30	! -	    1.00	  Very limited   Flooding	1.00	  Very limited   Flooding	1.00
Blancot	20	  Not limited 	   	  Not limited 	   	  Not limited 	
11: Doakum	   60	    Not limited 	   	    Not limited	     	    Not limited 	
Betonnie	25	  Not limited 	   	Not limited	   	Somewhat limited   Slope	0.01
12: Calladito	İ	į	       	  Not limited    Somewhat limited	 	    Not limited    Not limited	
13: Councelor	       60 		        1.00	    Very limited	0.50        1.00	    Very limited   Flooding   Slope	      1.00  0.01
Calladito	   30 	  Not limited 	   	  Not limited 	   	  Somewhat limited   Slope	    0.01
14: Councelor	30	    Very limited   Flooding 	      1.00	    Very limited   Flooding	      1.00	    Very limited   Flooding   Slope	    1.00  0.48
Eslendo	30	  Somewhat limited   Depth to soft   bedrock   Slope   Shrink-swell	  1.00    0.96  0.50	bedrock	  1.00    0.96  0.50	bedrock	  1.00    1.00  0.50
Calladito	25	İ	       	  Not limited   	       	  Somewhat limited   Slope	0.01

Table 10a.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	basements	ut	Dwellings with basements		Small commercial   buildings 	
	     		Value		Value		Value
16: Starlake	     85   	  Very limited   Flooding   Shrink-swell	1.00	  Very limited   Flooding   Shrink-swell	1.00	  Very limited   Flooding   Shrink-swell	    1.00  1.00
22: Querencia	50	  Somewhat limited   Shrink-swell	0.22	  Somewhat limited   Shrink-swell	0.22	  Somewhat limited   Slope   Shrink-swell	0.48
Lavodnas	   35   	  Very limited   Depth to soft   bedrock	1.00	  Very limited   Shrink-swell	1.00	  Very limited   Depth to soft   bedrock	1.00
		Shrink-swell	1.00	bedrock	1.00	Shrink-swell	1.00
20		Slope 	0.01	Slope 	0.01	Slope 	1.00
30: Orlie	45	  Somewhat limited   Shrink-swell	0.50	  Somewhat limited   Shrink-swell	0.50	  Somewhat limited   Shrink-swell	0.50
Tinian	40     	Somewhat limited   Depth to hard   bedrock   Shrink-swell	0.90	  Very limited   Depth to hard   bedrock   Shrink-swell	1.00	Somewhat limited   Depth to hard   bedrock   Shrink-swell	0.90
40: Nuffel	       90 	    Very limited   Flooding	        1.00	    Very limited   Flooding	        1.00	Slope      Very limited   Flooding	0.01        1.00
42: Suwanee	90	  Very limited   Flooding   Shrink-swell	1.00	-	    1.00  0.50	  Very limited   Flooding   Shrink-swell	1.00
44: Suwanee	90	  Very limited   Flooding   Shrink-swell	    1.00  0.50	  Very limited   Flooding	    1.00	  Very limited   Flooding   Shrink-swell	1.00
45: Nutreeah	   90       	  Very limited   Flooding   Shrink-swell 	    1.00  1.00 	  Very limited   Flooding   Shrink-swell   Depth to   saturated zone	  1.00  1.00  0.82	  Very limited   Flooding   Shrink-swell 	    1.00  1.00 
47: Conchovar	   90       	  Very limited   Flooding   Shrink-swell 	    1.00  1.00 	  Very limited   Flooding   Shrink-swell   Depth to   saturated zone	  1.00  1.00  0.73	  Very limited   Flooding   Shrink-swell 	    1.00  1.00 

Table 10a.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	basements	Dwellings without basements			Small commercial   buildings	
	     	Rating class and   limiting features	Value	Rating class and   limiting features	Value	Rating class and   limiting features	Value
49: Concho	  -   85 	  Very limited   Flooding   Shrink-swell	      1.00  0.50	  Very limited   Flooding   Shrink-swell	      1.00  0.50	  Very limited   Flooding   Shrink-swell	    1.00  0.50
51: Kwakina	   -  90 	    Very limited   Flooding	      1.00	    Very limited   Flooding	      1.00	    Very limited   Flooding	1.00
52: Zuniven	  -   90 	  Very limited   Flooding	    1.00	  Very limited   Flooding	    1.00	  Very limited   Flooding 	1.00
53: Hawaikuh	  -  80 	  Very limited   Shrink-swell	    1.00	  Very limited   Shrink-swell	    1.00	  Very limited   Shrink-swell	1.00
54: Venadito	  -  90     	  Very limited   Flooding   Shrink-swell 	  1.00  1.00 	  Very limited   Flooding   Shrink-swell   Depth to   saturated zone	  1.00  1.00  0.61	  Very limited   Flooding   Shrink-swell	  1.00  1.00 
55: Sparham	   -  95   	  Very limited   Flooding   Shrink-swell	    1.00  1.00	  Very limited   Flooding   Shrink-swell	    1.00  1.00	  Very limited   Flooding   Shrink-swell	1.00
60: Redpen	   -  90 	    Somewhat limited   Shrink-swell 	      0.50	  Somewhat limited   Shrink-swell	      0.50	    Somewhat limited   Shrink-swell 	0.50
100: Norkiki	  -  45     	  Somewhat limited   Depth to hard   bedrock   Shrink-swell	0.64	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	  Somewhat limited   Depth to hard   bedrock   Shrink-swell   Slope	  0.64    0.22  0.01
Kimnoli	  -  40 	  Very limited   Depth to hard   bedrock	    1.00	  Very limited   Depth to hard   bedrock	    1.00	  Very limited   Depth to hard   bedrock	1.00
110: Benally	   -  60 	    Somewhat limited   Shrink-swell 	      0.50	    Somewhat limited   Shrink-swell	      0.50	    Somewhat limited   Shrink-swell 	      0.50
Fruitland 111: Yelives	İ	 	1.00	Not limited 	j I	Not limited 	1.00

Table 10a.--Building Site Development--Continued

	  Pct.   of  map  unit	basements	ut	ot Dwellings with basements		   Small commercia   buildings 	1
	     	Rating class and   limiting features		Rating class and   limiting features			Value
115: Razito	45	    Not limited	     	    Not limited	     	    Somewhat limited   Slope	      0.01
Shiprock	   40 	  Not limited 	   	  Not limited 	   	  Somewhat limited   Slope	    0.01
116: Fajada	   30   	    Somewhat limited   Shrink-swell   	      0.50	  Somewhat limited   Depth to soft   bedrock   Shrink-swell	1	    Somewhat limited   Shrink-swell 	      0.50
Huerfano	30	Somewhat limited   Depth to soft   bedrock   Shrink-swell	  1.00    0.50	bedrock	  1.00    0.50	bedrock	  1.00    0.50
Benally	   25 		0.50	  Somewhat limited   Shrink-swell	    0.50	  Somewhat limited   Shrink-swell	0.50
118: Farb	   35     	  Very limited   Depth to hard   bedrock 	      1.00 	  Very limited   Depth to hard   bedrock 	      1.00	  Very limited   Depth to hard   bedrock   Slope	    1.00    0.48
Chipeta	30	  Somewhat limited   Depth to soft   bedrock   Slope   Shrink-swell	  1.00    0.63  0.50	bedrock   Slope			  1.00    1.00  0.50
Rock outcrop	25	  Not rated		  Not rated		  Not rated	
120: Doak	     55 	    Somewhat limited   Shrink-swell	      0.22	    Somewhat limited   Shrink-swell	      0.22	    Somewhat limited   Shrink-swell	      0.22
Shiprock	30	  Not limited 		  Not limited 	   	  Somewhat limited   Slope	0.01
121: Badland	     90 	    Not rated 	     	    Not rated 	     	    Not rated 	     

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct.   Dwellings without   of   basements   map   unit			Dwellings with basements		Small commercia   buildings 	al
	     	Rating class and   limiting features	Value   	Rating class and   limiting features			Value
122: Farb	     45   	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock   Slope	1.00
Rock outcrop	45	  Not rated 	   	  Not rated		  Not rated	
125: Sanfeco	   75   	! -	      1.00  1.00	  Very limited   Flooding	      1.00	  Very limited   Flooding   Shrink-swell	1.00
130: Chipeta	   40   	  Very limited   Depth to soft   bedrock   Slope	1.00	bedrock	    1.00    1.00	  Very limited   Depth to soft   bedrock   Slope	    1.00    1.00
Badlands	30	  Not rated		  Not rated		  Not rated	
Moncisco	15	! -	1   1.00	  Very limited   Slope	1   1.00	  Very limited   Slope	1.00
150: Riverwash	     65	    Not rated 	   	    Not rated 	   	    Not rated 	
Escawetter	25     	! -	1.00	!	  1.00  0.88	  Very limited   Flooding   	1.00
160: Escawetter	   40   	! -	      1.00		    1.00  0.47	  Very limited   Flooding 	1 1.00
Riverwash	35	  Not rated		  Not rated		  Not rated	
Razito	15	  Not limited	 	  Not limited		  Not limited	
205: Penistaja	     45 	    Not limited 	     	    Not limited 	     	    Not limited 	   
Tintero	40	Not limited 	   	Not limited		Somewhat limited   Slope	0.12

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements	Dwellings without   basements			   Small commercia   buildings 	1
	     	Rating class and   limiting features	Value   		Value   		Value
208: Marianolake	     85   	  Somewhat limited   Shrink-swell	      0.22	    Not limited   	         	  Somewhat limited   Shrink-swell   Slope	      0.22  0.01
210: Marianolake	   50     	  Somewhat limited   Shrink-swell 	    0.50   	  Somewhat limited   Shrink-swell 	    0.50 	  Somewhat limited   Shrink-swell   Slope	    0.50  0.01
Skyvillage	   30     	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	  Very limited   Depth to hard   bedrock   Shrink-swell   Slope	  1.00    0.22  0.01
212: Rehobeth	   90     	  Very limited   Flooding   Shrink-swell   Ponding	    1.00  1.00  1.00	  Very limited   Flooding   Shrink-swell   Ponding	    1.00  1.00  1.00	  Very limited   Flooding   Shrink-swell   Ponding	    1.00  1.00  1.00
215: Viuda	   35       	  Very limited   Depth to hard   bedrock   Shrink-swell 	    1.00    1.00	  Very limited   Shrink-swell     Depth to hard   bedrock	    1.00    1.00	  Very limited   Depth to hard   bedrock   Shrink-swell	    1.00    1.00
Penistaja	30	  Somewhat limited   Shrink-swell	    0.22	  Somewhat limited   Shrink-swell	    0.22	  Somewhat limited   Shrink-swell	    0.22
Rock outcrop	   25 	  Not rated 	   	  Not rated 	   	  Not rated 	   
220: Hagerwest	50	  Somewhat limited   Depth to hard   bedrock	    0.10 	  Very limited   Depth to hard   bedrock	    1.00	  Somewhat limited   Depth to hard   bedrock	    0.10
Bond	35	  Very limited   Depth to hard   bedrock 	    1.00 	  Very limited   Depth to hard   bedrock 	 	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.01
225: Aquima	   40   41	    Somewhat limited   Shrink-swell 	      0.50	    Somewhat limited   Shrink-swell 	      0.50	    Somewhat limited   Shrink-swell 	      0.50

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct.   of  map  unit	basements	ut	Dwellings with basements		Small commercial   buildings	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features			Value
225: Hawaikuh	40	    Somewhat limited   Shrink-swell	      0.50	    Somewhat limited   Shrink-swell	0.50	    Somewhat limited   Shrink-swell	0.50
230: Sparank	40	  Very limited   Flooding   Shrink-swell	    1.00  1.00		    1.00  1.00	  Very limited   Flooding   Shrink-swell	1.00
San Mateo	35	  Very limited   Flooding   Shrink-swell	1.00		1.00	  Very limited   Flooding   Shrink-swell	1.00
Zia	20	  Very limited   Flooding	1   1.00	  Very limited   Flooding	1.00	  Very limited   Flooding	1.00
235: Notal	     45 	  Very limited   Flooding   Shrink-swell	      1.00  0.50	    Very limited   Flooding 	1   1.00	    Very limited   Flooding   Shrink-swell	    1.00  0.50
Hamburn	40	  Very limited   Flooding   Shrink-swell	    1.00  0.22		  1.00  0.78	-	  1.00  0.22
240: Breadsprings	     35 	    Very limited   Ponding   Flooding	      1.00  1.00	  Very limited   Ponding   Flooding	      1.00  1.00	    Very limited   Ponding   Flooding	    1.00  1.00
Nahodish	   35     	  Very limited   Flooding   Ponding   Shrink-swell	  1.00  1.00  0.78	-	  1.00  1.00	  Very limited   Flooding   Ponding   Shrink-swell	  1.00  1.00  0.78
241: Mentmore	85	  Somewhat limited   Shrink-swell 	      0.78 	  Somewhat limited   Shrink-swell 	      0.78	  Somewhat limited   Shrink-swell   Slope	0.78
242: Gish	   45   	  Very limited   Flooding   Shrink-swell	    1.00  1.00	  Very limited   Flooding   Shrink-swell	    1.00  1.00	  Very limited   Flooding   Shrink-swell   Slope	  1.00  1.00  0.01
Mentmore	   35   	  Somewhat limited   Shrink-swell 	    0.78   	  Somewhat limited   Shrink-swell 	    0.78 	  Somewhat limited   Shrink-swell   Slope	  0.78  0.01

Table 10a.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	basements	ut	Dwellings with basements		Small commercia   buildings 	1
	     		Value				Value
244: Buckle	     85 	    Somewhat limited   Shrink-swell	      0.22	  Very limited   Shrink-swell	      1.00	  Somewhat limited   Shrink-swell   Slope	    0.22  0.01
245: Buckle	     35   	  Somewhat limited   Shrink-swell	      0.78 	  Not limited 	       	  Somewhat limited  Shrink-swell  Slope	0.78
Gapmesa	   30   	  Somewhat limited   Depth to hard   bedrock   Shrink-swell	  0.35    0.22	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	  Somewhat limited   Depth to hard   bedrock   Shrink-swell	0.35
Barboncito	   25     	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	  Very limited   Depth to hard   bedrock   Shrink-swell	1.00
250: Hospah	   35       	  Very limited   Depth to soft   bedrock   Shrink-swell	1.00    1.00	Depth to soft bedrock	    1.00    1.00	  Very limited   Depth to soft   bedrock   Shrink-swell	    1.00    1.00
Skyvillage	   30       	Slope    Very limited   Depth to hard   bedrock   Shrink-swell	1.00      1.00    0.50	bedrock	1.00      1.00    0.50	bedrock	1.00    1.00  1.00  0.50  0.12
Rock outcrop	25	  Not rated 	   	  Not rated 	   	  Not rated 	   
255: Farview	   50   	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.01	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.01	  Very limited   Depth to hard   bedrock   Slope	  1.00    1.00
Rock outcrop	   35 	  Not rated 	   	  Not rated 	   	  Not rated 	   
258: Eagleye	   40     	  Very limited   Depth to soft   bedrock   Shrink-swell	  1.00    1.00	  Very limited   Shrink-swell     Depth to soft   bedrock	  1.00    1.00	  Very limited   Depth to soft   bedrock   Shrink-swell	  1.00    1.00
	 	Slope 	1.00	Slope	1.00	Slope 	1.00

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements	ut	Dwellings with basements		Small commercial   buildings 	
	   		1		1		Value   
258: Atchee	35	Depth to hard bedrock	1.00	bedrock Content of large stones	1.00	bedrock   Content of large   stones	    1.00    0.98    0.78  0.48
Rock outcrop	20	  Not rated		  Not rated		  Not rated	
260: Quarries and Pits	     95	    Not rated 		    Not rated 	     	    Not rated 	     
261: Coal Mine Lands	100	    Not rated 		    Not rated 	   	    Not rated 	
265: Uranium Mined Lands-	   95 	  Not rated 		  Not rated 	     	  Not rated 	   
270: Alesna	   70 	    Very limited   Slope   Shrink-swell	      1.00  1.00	!	      1.00  1.00		    1.00  1.00
Rock outcrop	20	  Not rated		  Not rated		  Not rated	
275: Eldado	     85	    Not limited		    Not limited	     	    Not limited	   
280: Azabache	   85 	  Not limited   	     	  Not limited   	     	  Somewhat limited   Slope 	0.12
290: Rock outcrop	45	  Not rated		  Not rated	 	  Not rated	
Westmion	   30       	•	  1.00  1.00    1.00	  Very limited   Slope   Shrink-swell     Depth to soft   bedrock	  1.00  1.00    1.00		  1.00  1.00    1.00
Skyvillage	   15     	  Very limited   Depth to hard   bedrock 	  1.00   	  Very limited   Depth to hard   bedrock 	    1.00   	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.12

Table 10a.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	basements		Dwellings with basements	Dwellings with basements		1
	     						Value
291: Rock outcrop	       50	    Not rated	     	    Not rated	   	    Not rated	
Eagleye	   25       	Slope	  1.00  1.00    0.78	Depth to soft bedrock	  1.00  1.00    0.78	Depth to soft bedrock	  1.00  1.00    0.78
Atchee	   15         	bedrock	1.00    0.63	bedrock Slope	1.00    0.63	bedrock Slope	  1.00    1.00  0.44
300: Regracic	     80   	! =	      1.00 	  Very limited   Shrink-swell 	      1.00 	  Very limited   Shrink-swell   Slope	    1.00  0.01
305: Celavar	   50     	  Somewhat limited   Depth to hard   bedrock	    0.35   	  Very limited   Depth to hard   bedrock	    1.00   	  Somewhat limited   Depth to hard   bedrock   Slope	    0.35    0.01
Atarque	   35     	! -	    1.00   	  Very limited   Depth to hard   bedrock 	    1.00   	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.01
308: Fikel	     50   	  Very limited   Shrink-swell	      1.00	  Somewhat limited   Shrink-swell	      0.50	  Very limited   Shrink-swell   Slope	1.00
Venzuni	40   			  Very limited   Flooding   Shrink-swell	  1.00  1.00		1.00
310: Parkelei	   80     	  Somewhat limited   Shrink-swell   	      0.50 	  Somewhat limited   Shrink-swell 	      0.50 	  Somewhat limited   Shrink-swell   Slope 	      0.50  0.01
312: Bluewater	   90         	  Very limited   Flooding   Shrink-swell 	    1.00  0.50   	-	  1.00  0.95    0.50	  Very limited   Flooding   Shrink-swell 	  1.00  0.50 

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements	Dwellings without basements			   Small commercia   buildings 	ıl
	     	Rating class and   limiting features	Value	Rating class and   limiting features			Value
315:	į Į	 	į Į	 	į Į	 	į Į
Flugle	-  50 	Somewhat limited   Shrink-swell	  0.78	Not limited 	   	Somewhat limited   Shrink-swell	0.78
Fragua	40	  Not limited 		  Not limited 		  Somewhat limited   Slope	0.12
316: Royosa	   -  80 	  Somewhat limited   Slope	      0.01	    Somewhat limited   Slope 	0.01	    Very limited   Slope 	1.00
317: Highdye	  -   35	    Very limited   Depth to hard	      1.00	    Very limited   Shrink-swell	1.00	    Very limited   Depth to hard	      1.00
		bedrock   Shrink-swell	1.00	į	1.00	bedrock	1.00
		Slope	0.37	bedrock   Slope	0.37	   Slope	1.00
Evpark	 -  30   	  Somewhat limited   Depth to hard   bedrock   Shrink-swell	  0.90    0.50	  Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.50	  Somewhat limited   Depth to hard   bedrock   Shrink-swell	0.90
	į Į	 	j I	 	j I	Slope 	0.12
Bryway	-   20       	Very limited   Shrink-swell 	  1.00     	Very limited   Shrink-swell   Depth to soft   bedrock	  1.00  0.95 	Very limited   Shrink-swell   Slope 	  1.00  0.12 
320: Parkelei	45	  Somewhat limited   Shrink-swell	    0.50	  Not limited 	     	  Somewhat limited   Shrink-swell   Slope	0.50
Fraguni	 -  40 	  Not limited 	   	  Not limited 		  Somewhat limited   Slope	0.01
325: Venzuni	    -  90   	•	    1.00  1.00	•	    1.00  1.00	•	1.00
332: Evpark	  -  50 	  Somewhat limited   Shrink-swell	    0.50	  Very limited   Depth to hard   bedrock	    1.00	  Somewhat limited   Shrink-swell	0.50
	     	Depth to hard bedrock	0.06     	Shrink-swell	0.50	Depth to hard bedrock Slope	0.06

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements		Dwellings with basements	Į.	Small commercia   buildings 	al
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
332:		 		 		 	<u> </u> 
Arabrab	40   	Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22	bedrock	  1.00    0.22	Very limited   Depth to hard   bedrock   Shrink-swell	  1.00    0.22
						Slope	0.01
335: Venadito	   85   	  Very limited   Flooding   Shrink-swell	  1.00  1.00	!	  1.00  1.00	  Very limited   Flooding   Shrink-swell	  1.00  1.00
336: Nuffel	     45 	    Very limited   Flooding   Shrink-swell	1.00	    Very limited   Flooding   Shrink-swell	1.00	    Very limited   Flooding   Shrink-swell	    1.00  0.50
Venadito	   35 	  Very limited   Flooding   Shrink-swell	    1.00  1.00	  Very limited   Flooding   Shrink-swell	  1.00  1.00	  Very limited   Flooding   Shrink-swell	  1.00  1.00
338:		 		 		 	
Zyme	50   	Very limited   Depth to soft   bedrock	  1.00 	Very limited   Shrink-swell 	  1.00 	Very limited   Depth to soft   bedrock	  1.00 
		Shrink-swell	1.00	bedrock	1.00	į	1.00
	 	Slope 	1.00	Slope	1.00	Slope 	1.00
Lockerby	40       	Very limited   Shrink-swell   Slope 	  1.00  0.16 	1	  1.00  0.79    0.16	Very limited   Shrink-swell   Slope 	  1.00  1.00 
345:		 		 		 	
Rock outcrop	40	Not rated		Not rated		Not rated	
Tuces	40         	Very limited   Slope   Shrink-swell 	  1.00  1.00 	Very limited   Slope   Shrink-swell   Depth to soft   bedrock	  1.00  1.00  0.90	Very limited   Slope   Shrink-swell 	  1.00  1.00 
350:		   	į	   	į	   	
Toldohn	35	Very limited   Depth to soft   bedrock	1.00	Very limited   Shrink-swell 	1.00	Very limited   Depth to soft   bedrock	1.00
		Shrink-swell	1.00	Depth to soft bedrock	1.00	Shrink-swell	1.00
	 	Slope 	1.00	Slope	1.00	Slope 	1.00

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct.   Dwellings without   of   basements   map     unit			Dwellings with basements		Small commercial   buildings	
	     	Rating class and   limiting features	Value	Rating class and   limiting features			Value
350: Vessilla	     30     	  Very limited   Depth to hard   bedrock   Slope	    1.00    0.01	bedrock	      1.00    0.01	    Very limited   Depth to hard   bedrock   Slope	    1.00    1.00
Rock outcrop	20	Not rated	İ	Not rated		Not rated	İ
351: Rock outcrop	į	į	     	  Not rated 		    Not rated 	     
Vessilla	30     	Depth to hard   bedrock   Slope	  1.00    0.01	bedrock	1.00	bedrock	1.00
352: Zia	   80 	    Not limited 	     	    Not limited 		    Not limited 	   
353: Mido	90	  Not limited		  Not limited		  Not limited	
354: Knifehill	     80 	    Very limited   Shrink-swell	      1.00	    Very limited   Shrink-swell	      1.00	    Very limited   Shrink-swell	1.00
355: Rizno	   35     	  Very limited   Depth to hard   bedrock   Slope	    1.00    0.16	bedrock	    1.00    0.16	bedrock	  1.00    1.00
Tekapo	   30     	Very limited Depth to soft bedrock Shrink-swell	  1.00    1.00	į	  1.00    1.00	  Very limited   Slope     Depth to soft	  1.00    1.00
	 	   Slope	11.00	bedrock   Slope	11.00	bedrock   Shrink-swell	11.00
Rock outcrop	20	  Not rated	į Į	  Not rated	į Į	  Not rated	į Į
357: Heshotauthla	     85   	  Very limited   Flooding   Shrink-swell	      1.00  1.00	-	      1.00  1.00	  Very limited   Flooding   Shrink-swell	    1.00  1.00
360: Hosta	     45 	    Very limited   Shrink-swell 	      1.00	  Very limited   Shrink-swell 	1   1.00	    Very limited   Shrink-swell 	1.00

Table 10a.--Building Site Development--Continued

Map symbol and soil name	·		ut	Dwellings with basements		Small commercia   buildings 	1
	     		Value				Value
360: Concho	40	  Very limited   Flooding   Shrink-swell	      1.00  1.00	  Very limited   Flooding   Shrink-swell	      1.00  1.00	  Very limited   Flooding   Shrink-swell	1.00
361: Monpark	   80     	  Very limited   Shrink-swell   	      1.00 		      1.00  0.71	  Very limited   Shrink-swell   Slope 	    1.00  0.01
365: Vessilla	   55     	  Very limited   Depth to hard   bedrock   Slope	1.00	bedrock	    1.00    0.01	  Very limited   Depth to hard   bedrock   Slope	1.00
Rock outcrop	35	  Not rated 		  Not rated 		  Not rated 	   
366: Bosonoak	     95 	    Somewhat limited   Shrink-swell	0.22	    Not limited 	     	    Somewhat limited   Shrink-swell	0.22
367: Chunkmonk	   85     	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock	      1.00 	  Very limited   Depth to hard   bedrock   Slope	1.00
368: Simitarq	   60         	  Very limited   Depth to hard   bedrock   Shrink-swell 	    1.00    1.00	  Very limited   Shrink-swell     Depth to hard   bedrock	    1.00    1.00	  Very limited   Depth to hard   bedrock   Shrink-swell 	    1.00    1.00    0.12
Celavar	   20   	  Somewhat limited   Depth to hard   bedrock	    0.35   	  Very limited   Depth to hard   bedrock	    1.00   	  Somewhat limited   Depth to hard   bedrock   Slope	  0.35    0.12
375: Todest	     60   	  Somewhat limited   Depth to hard   bedrock 	      0.84 	    Very limited   Depth to hard   bedrock 	      1.00 	  Somewhat limited   Depth to hard   bedrock   Slope	    0.84    0.12
Shadilto	   25       	  Very limited   Depth to hard   bedrock   	    1.00   	  Very limited   Depth to hard   bedrock   	    1.00   	  Very limited   Depth to hard   bedrock   Slope 	  1.00    0.12

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements	Dwellings with basements		Small commercia   buildings 	1	
	     	Rating class and   limiting features	Value		Value		Value
376: Todest	     80   	  Somewhat limited   Depth to hard   bedrock 	      0.90   	    Very limited   Depth to hard   bedrock 	      1.00   	    Somewhat limited   Depth to hard   bedrock   Slope	      0.90    0.12
380: Berryhill	   50 	  Very limited   Shrink-swell	    1.00	  Very limited   Shrink-swell	    1.00	  Very limited   Shrink-swell   Slope	  1.00  0.12
Casamero	   45       	  Very limited   Depth to soft   bedrock   Shrink-swell	  1.00    1.00   	  Very limited   Shrink-swell     Depth to soft   bedrock	  1.00    1.00 	  Very limited   Depth to soft   bedrock   Shrink-swell   Slope	  1.00    1.00    0.48
385: Mcorreon	   	  Very limited   Shrink-swell   Slope 	    1.00  1.00	  Very limited   Shrink-swell   Slope    Not rated	  1.00  1.00 	  Very limited   Slope   Shrink-swell 	  1.00  1.00 
390: Banquito	 	 	      0.06	Very limited   Depth to hard   bedrock	 	Somewhat limited   Depth to hard   bedrock	0.06
395: Cabezon	  -   60     	bedrock	    1.00    1.00	  Very limited   Shrink-swell   Depth to hard   bedrock	    1.00    1.00	  Very limited   Depth to hard   bedrock   Shrink-swell 	  1.00    1.00    0.12
Mcorreon	30	  Somewhat limited   Shrink-swell	    0.50	  Somewhat limited   Shrink-swell	    0.50	Somewhat limited   Shrink-swell   Slope	0.50
400: Shoemaker	     45   	!	      0.64 	  Very limited   Depth to hard   bedrock	      1.00 	  Somewhat limited   Depth to hard   bedrock   Slope	    0.64    0.12
Stozuni	   35     	  Very limited   Depth to hard   bedrock 	    1.00   	  Very limited   Depth to hard   bedrock 	    1.00   	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.12

Table 10a.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	basements	ut	Dwellings with basements		   Small commercia   buildings 	1
	     	Rating class and   limiting features	Value   	Rating class and   limiting features			Value
403: Valnor	     50     	  Very limited   Shrink-swell   Slope 	      1.00  0.01	!	    1.00  0.15    0.01	  Very limited   Shrink-swell   Slope 	1.00
Techado	   30       	  Very limited   Depth to soft   bedrock   Shrink-swell     Slope	  1.00    1.00    1.00	  Very limited   Shrink-swell     Depth to soft   bedrock   Slope	  1.00    1.00    1.00	  Very limited   Depth to soft   bedrock   Shrink-swell 	  1.00    1.00    1.00
404: Rock outcrop	     35	    Not rated	   	    Not rated	   	    Not rated	   
Techado	   35   		 	Depth to soft	  1.00    1.00	  Very limited   Depth to soft   bedrock   Shrink-swell	  1.00    1.00
Stozumi	     25   	Slope  Very limited  Depth to hard  bedrock  Slope	  1.00      1.00    0.16	bedrock	  1.00      1.00    0.16	   Slope    Very limited   Depth to hard   bedrock   Slope	  1.00      1.00    1.00
405: Fortwingate	   50       	  Very limited   Shrink-swell   Depth to hard   bedrock	      1.00  0.79 	!	    1.00  1.00	  Very limited   Shrink-swell   Depth to hard   bedrock   Slope	    1.00  0.79    0.12
Owlrock	   35       	  Very limited   Depth to hard   bedrock   Content of large   stones	  1.00    1.00 	bedrock	1.00	bedrock	  1.00    1.00    0.12
406: Polich	   90         	  Very limited   Flooding   Shrink-swell   	    1.00  0.50   	  Very limited   Flooding   Depth to   saturated zone   Shrink-swell	    1.00  0.99    0.50	  Very limited   Flooding   Shrink-swell 	    1.00  0.50   

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements	ut	Dwellings with basements		Small commercial   buildings 	
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value 
407:	<u> </u> 		į Į		į Į		į Į
Cinnadale	50   	Very limited   Depth to hard   bedrock	1.00	Very limited   Depth to hard   bedrock	1.00	Very limited   Depth to hard   bedrock	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
Heckly	   35   	  Very limited   Slope 	1 1.00	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Slope 	1.00
	     	Shrink-swell   Depth to hard   bedrock	0.50		1.00  0.50	Shrink-swell   Depth to hard   bedrock	0.50
408: Mirabal	     50 	    Very limited   Slope	1.00	  Very limited   Depth to hard   bedrock	1.00	    Very limited   Slope 	1.00
	   	Depth to hard bedrock	0.46		1.00	Depth to hard bedrock	0.46
		Content of large   stones	0.01	Content of large   stones	0.01	Content of large   stones	0.01
Zuni	   40       	  Very limited   Shrink-swell   Depth to hard   bedrock   Slope	  1.00  0.71    0.01	Depth to hard bedrock	  1.00  1.00      0.01	Slope 	  1.00  1.00    0.71
409:	 	 		 		 	
Rauster	60   	Very limited   Shrink-swell   Slope	  1.00  1.00	Very limited   Shrink-swell   Slope	  1.00  1.00	Very limited   Shrink-swell   Slope	  1.00  1.00
Rock outcrop	   30 	  Not rated 	   	  Not rated 	   	  Not rated 	   
410: Montillo	   50       	  Very limited   Shrink-swell   Depth to hard   bedrock   Slope	  1.00  0.29    0.16	  Very limited   Shrink-swell   Depth to hard   bedrock   Slope	  1.00  1.00    0.16	Slope       Depth to hard	  1.00  1.00    0.29
Tsoodzil	   40   	  Very limited   Shrink-swell   Slope	      1.00  1.00	  Very limited   Shrink-swell   Slope	      1.00  1.00	bedrock    Very limited   Shrink-swell   Slope	    1.00  1.00
411: Ligocki	     45 	    Very limited   Shrink-swell	      1.00	    Not limited   	     	    Very limited   Shrink-swell	1.00

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements		Dwellings with     basements		Small commercial buildings	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
411: Robolata	     35   	Flooding	1.00	, ,	1.00	, ,	1.00
412: Rock outcrop	50	    Not rated	   	    Not rated	 	    Not rated	
Rionutria	   25     	Content of large stones Depth to hard		bedrock   Content of large	1.00	   Very limited   Content of large   stones   Slope	  1.00    1.00
	   	İ	İ	İ	  0.50 	bedrock	0.90
Zaster	   25         	Slope 	1.00    0.71	  Very limited   Depth to hard   bedrock	1.00    1.00	bedrock	0.50    1.00    0.71    0.33
413: Morclay	     85 	•	      1.00	    Very limited   Shrink-swell	      1.00	    Very limited   Shrink-swell	      1.00
414: Zunalei	     50	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	0.12
Corzuni	   40 	  Not limited 	   	  Not limited 	   	  Somewhat limited   Slope	0.12
415: Tsoodzil	     60   		      1.00  1.00		      1.00  1.00		    1.00  1.00
Rubble Land	   20 	  Not rated 	[   	  Not rated 	!   	  Not rated 	
416: Rock outcrop	   70 	  Not rated 	   	  Not rated 	   	  Not rated 	   

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct.   of  map  unit	basements	ut	Dwellings with basements		Small commercia   buildings 	1
	     		Value				Value
416:		 		 		 	
Bluesky	-  20   	Very limited   Depth to hard   bedrock	1.00	bedrock	1.00	Very limited   Depth to hard   bedrock	1.00
		Slope 	0.16 	Slope 	0.16 	Slope 	1.00
418: Asaayi	 -  40 	  Very limited   Depth to hard	    1.00		    1.00	  Very limited   Depth to hard	    1.00
		bedrock   Shrink-swell   Slope	  0.50  0.01	!	  0.50  0.01	bedrock   Slope   Shrink-swell	  1.00  0.50
			į		į		
Osoridge	-  35   	Very limited   Depth to hard   bedrock	1.00	Very limited   Shrink-swell 	  1.00 	Very limited   Depth to hard   bedrock	1.00
	İ	Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		   Slope 	0.01	!	0.01	   Slope 	1.00
419:			į		į		
Fortwingate	-  35   	Very limited   Shrink-swell   Slope	1.00		1.00	!	1.00
		Depth to hard bedrock	0.79	!	1.00	   Depth to hard   bedrock	0.79
Cinnadale	 -  30 	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock	    1.00	  Very limited   Depth to hard   bedrock	1   1.00
		Content of large   stones	0.95 	Content of large   stones	0.95 	Slope 	1.00
		Slope	0.16	!	0.16	Content of large   stones	0.95
Rock outcrop	 -  20 	  Not rated 		  Not rated 	 	  Not rated 	   
420:		 	į		į		
Seco	-  85   	Flooding   Shrink-swell	1.00	Flooding   Shrink-swell	1.00	Flooding   Shrink-swell	1.00
425: Montillo	   -  50	    Very limited		    Very limited	   	    Very limited	   
		Shrink-swell   Depth to hard   bedrock	1.00  0.10 	Shrink-swell   Depth to hard   bedrock	1.00  1.00	Shrink-swell   Depth to hard   bedrock	1.00
		Content of large   stones	0.01	Content of large   stones	0.01	stones	0.01
		 		 		Slope 	0.01

Table 10a.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	basements	ut	   Dwellings with   basements 		Small commercial buildings	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and limiting features	Value
425: Canoneros	   35         	    Very limited   Depth to hard   bedrock   Shrink-swell 	    1.00    1.00 	į	    1.00    1.00 	bedrock	    1.00    1.00    0.01
430: Montillo	   80       	  Very limited   Shrink-swell   Depth to hard   bedrock	  1.00  0.01 	1	  1.00  1.00   	1	  1.00  0.01    0.01
435: Tsoodzil	   50 	  Very limited   Shrink-swell   Slope	    1.00  1.00		    1.00  0.50	1	    1.00  1.00
Amcec	40	  Very limited   Slope 	1.00	  Very limited   Slope 	1.00	  Very limited   Slope 	1.00
440: Chivato	90	  Very limited   Shrink-swell   Ponding	    1.00  1.00	1	    1.00  1.00	1	    1.00  1.00
525: Silcat	   85   	  Very limited   Shrink-swell	1.00	  Very limited   Shrink-swell	1.00	  Very limited   Shrink-swell   Slope	1.00
550: Bryway	   50     	  Very limited   Shrink-swell 	      1.00 	1	      1.00  0.29	1	    1.00  0.01
Galzuni	   35   	  Very limited   Shrink-swell 	    1.00 	  Somewhat limited   Shrink-swell	    0.50	  Very limited   Shrink-swell   Slope	  1.00  0.01
555: Parkelei	     45 	    Not limited 	     	    Not limited 	     	    Somewhat limited   Slope	      0.12
Evpark	   35   	  Somewhat limited   Shrink-swell 	    0.50	  Very limited   Depth to hard   bedrock	    1.00	  Somewhat limited   Shrink-swell 	    0.50
	       	   Depth to hard   bedrock   	0.10		  0.50       	Slope     Depth to hard   bedrock	0.12

Table 10a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	basements	Dwellings without   basements			Small commercia   buildings 	al
	     	Rating class and limiting features	Value   	Rating class and   limiting features	Value	Rating class and   limiting features	Value 
560:			   				   
Flugle	45	Not limited	į	Not limited	į	Not limited	į
Teczuni	35	  Somewhat limited   Shrink-swell	    0.50	  Somewhat limited   Shrink-swell	0.50	  Somewhat limited   Shrink-swell	0.50
561:						 	
Flugle	50	Not limited	 	Not limited		Somewhat limited   Slope	0.12
Plumasano	40	  Not limited 	   	  Not limited 		  Somewhat limited   Slope	0.12
565:				[		 	
Plumasano	65	  Very limited   Slope	1.00	Very limited   Slope	1.00	Very limited   Slope	1.00
Rock outcrop	20	  Not rated 	   	  Not rated 	   	  Not rated 	   
566:	į		į		į		į
Bamac	90	Very limited   Slope	1.00	Very limited   Slope	1.00	Very limited   Slope	1.00
575:						 	
Ramah	45	Somewhat limited   Shrink-swell	0.50	Not limited		Somewhat limited   Shrink-swell	0.50
Pescado	   35   	  Very limited   Depth to hard   bedrock	    1.00 	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock	1   1.00
	   	Shrink-swell	0.50	Shrink-swell 	0.50	Shrink-swell   Slope 	0.50
	İ		i		İ		.i

Table 10b.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

	Pct.   Local roads and   of   streets   map     unit		Shallow excavations		Lawns and landscaping		
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	
8: Water	    100 	    Not rated 	     	    Not rated 	     	    Not rated 	
10: Tsosie	   35 			  Somewhat limited   Cutbanks cave		  Very limited   Sodium content	1.00
Councelor		'		  Somewhat limited   Cutbanks cave	0.10	  Not limited 	
Blancot	20	  Not limited 		  Very limited   Cutbanks cave		  Somewhat limited   Droughty	0.20
11: Doakum	     60 	    Not limited 	     		      0.10	    Not limited 	     
Betonnie	25	  Not limited 	   	  Very limited   Cutbanks cave		  Somewhat limited   Droughty	0.02
12: Calladito	     55 	    Not limited	     	    Very limited   Cutbanks cave		    Somewhat limited   Droughty	0.29
Elias	30	  Not limited   	     	  Somewhat limited   Cutbanks cave 	    0.10 	  Very limited   Sodium content   Droughty	1.00
13: Councelor	     60 	!			1	    Not limited 	     
Calladito	30	  Not limited 	   	_		  Somewhat limited   Droughty	0.55
14: Councelor				    Somewhat limited   Cutbanks cave	      0.10	    Not limited 	     
Eslendo	   30   	:		  Very limited   Depth to soft   bedrock	1	  Very limited   Depth to bedrock 	    1.00
	   	Slope		Cutbanks cave	0.96  0.10 	Droughty   Slope 	0.98 0.96

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati    -  -	ons	Lawns and landscaping	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features			Value
14:	   		 				 
Calladito	25   	Not limited   	   	Very limited   Cutbanks cave 	1.00	Somewhat limited   Droughty 	0.61
16:					i		
Starlake	85       	Very limited   Low strength   Shrink-swell   Flooding	  1.00  1.00  0.40		  0.50  0.10 	Very limited   Sodium content   Too clayey   Droughty	  1.00  1.00  0.01
22:					ļ		
Querencia	50   	Very limited   Low strength   Shrink-swell	  1.00  0.22	Somewhat limited   Cutbanks cave 	0.10	Not limited   	   
Lavodnas	   35   	  Very limited   Depth to soft   bedrock	1   1.00	  Very limited   Depth to soft   bedrock	1.00	  Very limited   Depth to bedrock 	1.00
	   	Shrink-swell   Slope 	1.00  0.01 		0.12  0.10  0.01	Droughty   Slope 	1.00
30:	 	 	 	 		 	
Orlie	45   	Somewhat limited   Shrink-swell   Frost action	0.50	Somewhat limited   Cutbanks cave	0.10	  Not limited   	   
Tinian	   40 	  Very limited   Low strength 	    1.00	  Very limited   Depth to hard   bedrock	1.00	  Somewhat limited   Depth to bedrock 	    0.90
		Depth to hard bedrock	0.90		0.12	 	
	 	Shrink-swell	0.50 	Cutbanks cave	0.10	 	
40:					İ		
Nuffel	90	Very limited   Flooding   Low strength	  1.00  0.22		  0.80  0.10	Very limited   Flooding 	1.00
42:		 		 		 	
Suwanee	90       	Very limited   Flooding   Low strength   Shrink-swell	  1.00  1.00  0.50	Somewhat limited   Flooding   Cutbanks cave	  0.80  0.10	Very limited   Flooding   	  1.00   
44: Suwanee	90	  Very limited   Flooding	1.00	  Somewhat limited   Flooding	0.80	  Very limited   Flooding	1.00
	   	Low strength Shrink-swell	1.00  0.50 	Too clayey   Cutbanks cave 	0.28  0.10 	Too clayey   	1.00

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct.   of  map  unit	streets		   Shallow excavati     	ons	Lawns and landscaping	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features		Rating class and   limiting features	Value   
45: Nutreeah	90	  Very limited   Low strength	1.00	! -	      0.82	    Not limited	
	     	   Shrink-swell   Flooding 	1.00	saturated zone Too clayey Cutbanks cave	0.50	 	     
47: Conchovar	   90       	   Very limited   Low strength     Shrink-swell   Flooding	  1.00    1.00  0.40	Somewhat limited   Depth to   saturated zone   Too clayey   Cutbanks cave	   0.73   0.50   0.10	  Not limited     	
49: Concho	   85     	  Very limited   Low strength   Shrink-swell   Flooding	    1.00  0.50  0.40	!	      0.28  0.10	  Not limited   	
51: Kwakina	     90 	    Very limited   Flooding 	1.00	  Very limited   Cutbanks cave   Flooding	    1.00  0.60	    Somewhat limited   Flooding   Droughty	    0.60  0.05
52: Zuniven	   90     	  Very limited   Flooding   Low strength   Frost action	    1.00  1.00  0.50	  Very limited   Cutbanks cave   Flooding	      1.00  0.80	    Very limited   Flooding   	
53: Hawaikuh	     80   	  Very limited   Shrink-swell   Low strength	1.00	  Somewhat limited   Too clayey   Cutbanks cave	    0.12  0.10	    Not limited   	
54: Venadito	   90         	  Very limited   Flooding   Low strength   Shrink-swell	  1.00  1.00  1.00 	Very limited   Too clayey   Cutbanks cave   Depth to   saturated zone   Flooding	  1.00  1.00  0.61    0.60	  Very limited   Too clayey   Flooding 	  1.00  0.60 
55: Sparham	   95       	  Very limited   Flooding   Low strength   Shrink-swell	    1.00  1.00  1.00	  Somewhat limited   Flooding   Too clayey   Cutbanks cave	    0.80  0.50  0.10	  Very limited   Flooding   	    1.00   

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct.   of  map  unit	streets	d	Shallow excavati	ons	Lawns and landsca	ping
	   	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
60: Redpen	90	  Somewhat limited   Shrink-swell	      0.50	  Somewhat limited   Cutbanks cave	      0.10	    Not limited 	
100: Norkiki	   45 	  Somewhat limited   Depth to hard   bedrock   Shrink-swell	    0.64    0.22	bedrock	    1.00    0.10	į	    0.65    0.02
Kimmoli	40		į	  Very limited	į	  Very limited   Depth to bedrock	   
110: Benally	     60	  Somewhat limited   Shrink-swell	      0.50	  Somewhat limited   Cutbanks cave	0.10	  Very limited   Sodium content	1.00
Fruitland	25	  Not limited 	   	  Very limited   Cutbanks cave	1.00	  Not limited 	   
111: Yelives	     85 	    Somewhat limited   Flooding	      0.40	  Very limited   Cutbanks cave	1   1.00	    Not limited   	
115: Razito	45	  Not limited	 	  Very limited   Cutbanks cave	1.00	  Somewhat limited   Droughty	0.69
Shiprock	40	  Not limited 	   	  Somewhat limited   Cutbanks cave	0.10	  Not limited 	   
116: Fajada	30	  Very limited   Low strength     Shrink-swell	    1.00    0.50	bedrock Depth to dense layer	0.64	   Droughty	1.00
	   	   	   	Cutbanks cave   	0.10   	Depth to bedrock   Gravel content 	0.65  0.18 
Huerfano	30	Very limited   Depth to soft   bedrock   Low strength   Shrink-swell	  1.00    1.00  0.50	Very limited   Depth to soft   bedrock   Cutbanks cave	  1.00    0.10	Very limited   Depth to bedrock     Sodium content   Droughty	  1.00    1.00  1.00
Benally	   25   	  Somewhat limited   Shrink-swell 	    0.50   	  Somewhat limited   Cutbanks cave   	    0.10   	  Very limited   Sodium content   Droughty 	  1.00  0.29

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	!		ons	Lawns and landsca	ping
	     	Rating class and   limiting features	1	Rating class and   limiting features		•	Value
118: Farb	     35   		1	bedrock	      1.00    0.10		1.00
Chipeta	   30     	Depth to soft   bedrock   Low strength	  1.00    1.00  0.63	bedrock   Slope	  1.00    0.63  0.10	   Salinity	  1.00    1.00  1.00
	     	! -	0.50			Droughty   Too clayey   Slope 	1.00  1.00  0.63
Rock outcrop	25	  Not rated 		Not rated		  Not rated 	
120: Doak	     55 			  Somewhat limited   Cutbanks cave	0.10	    Not limited 	
Shiprock	   30 	  Not limited 	   	  Somewhat limited   Cutbanks cave	0.10	  Not limited 	
121: Badland	     90 	    Not rated 	     	    Not rated 	     	    Not rated 	
122: Farb	   45   	  Very limited   Depth to hard   bedrock	1	  Very limited   Depth to hard   bedrock   Cutbanks cave	    1.00    0.10		  1.00    1.00
		 		Cutbanks cave		Graver content   Droughty	1.00
Rock outcrop	   45 	  Not rated 	   	  Not rated 	   	  Not rated 	   
125: Sanfeco	   75     	Low strength Shrink-swell	  1.00  1.00  0.40	Too clayey	  1.00  0.12 	  Not limited     	       
130: Chipeta	   40     	bedrock	    1.00    1.00	bedrock	    1.00    1.00  0.10	Droughty Slope	  1.00  1.00
Badlands	     30 	    Not rated 	     	    Not rated 	     	Gravel content    Not rated 	0.08     

Table 10b.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	of streets map unit		   Shallow excavati   	ons	Lawns and landscaping	
	     						Value   
130: Moncisco	     15       	! -	      1.00       		      1.00  0.10   	Droughty	    1.00  1.00  1.00  0.01
150: Riverwash	   35	    Not rated	i I	    Not rated	j I	    Not rated	İ İ
Escawetter	   25     		    1.00   	Depth to saturated zone	1.00  0.88	  Very limited   Flooding   Droughty 	  1.00  0.49 
160: Escawetter	   40     	! -	      1.00   	Flooding	    1.00  0.80  0.47	-	    1.00  0.89
Riverwash	35	  Not rated		  Not rated		  Not rated	
Razito	15	  Not limited 	     	  Very limited   Cutbanks cave		  Somewhat limited   Droughty	0.92
205: Penistaja	45	  Not limited 	     	  Somewhat limited   Cutbanks cave	0.10	    Not limited 	
Tintero	40	  Not limited 	   		1   1.00	  Not limited 	
208: Marianolake	     85   		      0.22	    Very limited   Cutbanks cave 	      1.00	    Not limited   	     
210: Marianolake	50	  Very limited   Low strength   Shrink-swell	    1.00  0.50	Somewhat limited   Cutbanks cave	    0.10	  Not limited   	     
Skyvillage	   30         	   Very limited   Depth to hard   bedrock   Shrink-swell 	  1.00    0.22   	   Very limited   Depth to hard   bedrock   Cutbanks cave 	  1.00    0.10   	Very limited   Depth to bedrock   Droughty   Gravel content   Content of large   stones	  1.00  0.68

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati   	ons	Lawns and landsca	ping
	    -	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
212:	İ	 	į Į	<u> </u> 	į Į	 	į Į
Rehobeth	-  90         	Very limited	  1.00  1.00  1.00  1.00	Ponding	  1.00  1.00  0.60  0.28	· -	  1.00  0.60   
215:			i	 	i	! 	
Viuda	-  35   	  Very limited   Depth to hard   bedrock	1.00	Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to bedrock 	1.00
		Shrink-swell 	1.00	Cutbanks cave	0.10	Content of large   stones	1.00
		Low strength	1.00	Too clayey	0.03	Droughty Gravel content	0.88  0.02
Penistaja	 -  30 	  Somewhat limited   Shrink-swell	0.22	  Somewhat limited   Cutbanks cave		  Not limited 	
Rock outcrop	-  25	  Not rated		  Not rated	   	  Not rated	
220:		 				 	
Hagerwest	-   50     	Somewhat limited   Depth to hard   bedrock	  0.10   	Very limited   Depth to hard   bedrock   Cutbanks cave	  1.00    0.10	Somewhat limited   Depth to bedrock 	0.10
Bond	 -  35   	  Very limited   Depth to hard   bedrock		  Very limited   Depth to hard   bedrock   Cutbanks cave	  1.00    0.10	_	  1.00    1.00
	İ		Ì				
225: Aquima	 -  40 	  Somewhat limited   Shrink-swell	0.50	  Very limited   Cutbanks cave	1.00	  Not limited 	
Hawaikuh	-  40   	  Very limited   Low strength   Shrink-swell	1.00	Somewhat limited   Cutbanks cave 	0.10	  Not limited   	
230:		 				 	
Sparank	-   40   	Very limited   Flooding   Low strength   Shrink-swell	  1.00  1.00  1.00	Somewhat limited   Flooding   Too clayey   Cutbanks cave	  0.60  0.50  0.10	Somewhat limited   Flooding 	0.60
San Mateo	  -  35   	  Very limited   Flooding   Shrink-swell	1.00	  Somewhat limited   Flooding   Cutbanks cave	  0.60  0.10	  Somewhat limited   Flooding 	    0.60

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct.   of  map  unit	streets	d   Shallow excavations		ons	Lawns and landscapi	
	     	Rating class and   limiting features	Value 	Rating class and   limiting features		Rating class and   limiting features	Value 
230: Zia	    -  20 	    Somewhat limited   Flooding	0.40	  -  Somewhat limited   Cutbanks cave	0.10	    Not limited 	       
235:		 		 	1	 	
Notal	-   45     	Very limited   Low strength   Shrink-swell   Flooding	  1.00  0.50  0.40		0.12	  Very limited   Sodium content   	1.00
Hamburn	-   40   	  Very limited   Flooding   Shrink-swell	  1.00  0.22	!	0.60	Somewhat limited   Flooding 	0.60
240:	i		i		İ		
Breadsprings	35	Very limited   Ponding   Flooding	1.00		  1.00  0.10	Very limited   Ponding 	1.00
Nahodish	35	Very limited Low strength Ponding Shrink-swell Flooding	  1.00  1.00  0.78  0.40	Too clayey	  1.00  0.50  0.10	Very limited   Ponding       	1.00
241:		 		 		 	
	  -   85   	  Very limited   Low strength   Shrink-swell	  1.00  0.78	!	0.10	  Not limited   	
242: Gish	  -  45   	  Very limited   Low strength   Shrink-swell   Flooding	  1.00  1.00  0.40		  0.12  0.10	  Not limited     	
Mentmore	 -  35   	  Very limited   Low strength   Shrink-swell	  1.00  0.78	  Somewhat limited   Cutbanks cave 		  Not limited     	     
244:		 					
Buckle	-   85     	   Very limited   Low strength     Shrink-swell	  1.00    0.22	Very limited   Content of   organic matter   Cutbanks cave	  1.00    0.10	Not limited       	     
	[		[	ļ	[	ļ	
245: Buckle	 -  35 	  Somewhat limited   Shrink-swell 	    0.78	  Somewhat limited   Cutbanks cave 	    0.10	  Not limited   	     

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati   	ons	Lawns and landscaping	
	     	Rating class and   limiting features	Value	Rating class and   limiting features	Value	Rating class and   limiting features	Value
245: Gapmesa	     30   	  Very limited   Low strength     Depth to hard	      1.00    0.35	bedrock	      1.00    0.10	    Somewhat limited   Depth to bedrock	      0.35
	   	bedrock Shrink-swell	0.22	 	   	 	   
Barboncito	25   	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock	  1.00 	  Very limited   Depth to bedrock	1.00
	   	Low strength Shrink-swell	1.00	Cutbanks cave	0.10	Droughty	1.00
250: Hospah	   35 	  Very limited   Depth to soft	1.00	  Very limited   Depth to soft	1.00	  Very limited   Depth to bedrock	1.00
	     	bedrock   Low strength   Shrink-swell 	1.00	bedrock   Slope   Too clayey 	1.00  0.50	   Droughty   Content of large   stones	1.00
	     	Slope 	1.00	Cutbanks cave	0.10	Slope   Gravel content	1.00
Skyvillage	30   	Depth to hard bedrock	1.00	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to bedrock	1.00
	     	Shrink-swell   	0.50     	Cutbanks cave	0.10     	Droughty Gravel content Content of large stones	1.00  0.68  0.11
Rock outcrop	   25 	  Not rated 	   	  Not rated 	   	  Not rated 	   
255: Farview	   50     	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.01	bedrock	  1.00    0.10	  Very limited   Depth to bedrock     Droughty	  1.00    0.94
Rock outcrop	     35	    Not rated	   	Slope    Not rated	0.01	Slope    Not rated	0.01
258: Eagleye	     40 	    Very limited   Depth to soft	      1.00	    Very limited   Depth to soft	      1.00	    Very limited   Depth to bedrock	      1.00
	     	bedrock   Shrink-swell   Slope   Low strength	  1.00  1.00  1.00	bedrock   Slope   Too clayey   Cutbanks cave	  1.00  0.12  0.10	Droughty Slope	1.00

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	Shallow excavati	ons	Lawns and landsca	ping	
	     	Rating class and   limiting features		Rating class and   limiting features			Value
258: Atchee	     35       	: -	1.00	bedrock   Content of large   stones	1.00	İ	    1.00    1.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
260: Quarries and Pits	     95 	    Not rated 	     	    Not rated 		    Not rated 	   
261: Coal Mine Lands	  100	  Not rated		  Not rated		  Not rated	
265: Uranium Mined Lands-	     95 	    Not rated 	     	    Not rated 		    Not rated 	     
270: Alesna	   70     	  Very limited   Slope   Shrink-swell	    1.00  1.00		    1.00  1.00	  Very limited   Slope   Content of large   stones	  1.00  1.00
		Low strength	1.00	į	0.28	Gravel content	0.61
Rock outcrop	20	Not rated 		Not rated 		Not rated 	
275: Eldado	   85     	  Not limited     	       	  Very limited   Cutbanks cave   	    1.00 	  Somewhat limited   Gravel content   Droughty 	  0.62  0.02
280: Azabache	   85       	  Not limited  -  -	         	  Very limited   Cutbanks cave   	    1.00   	  Very limited   Gravel content   Sodium content   Droughty	  1.00  1.00  0.54
290: Rock outcrop	45	  Not rated	į Į	  Not rated	į Į	  Not rated	į Į
Westmion	   30   	  Very limited   Slope 	    1.00	  Very limited   Depth to soft   bedrock	    1.00	  Very limited   Depth to bedrock 	    1.00
	 	Depth to soft bedrock	1.00	Slope	1.00	Slope 	1.00
	     	Low strength Shrink-swell	1.00	Too clayey Cutbanks cave	0.28  0.10 	Droughty Content of large stones	0.98  0.01 

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	đ	   Shallow excavati   	ons	Lawns and landscaping		
	     	Rating class and   limiting features	Value	Rating class and   limiting features			Value 	
290: Skyvillage	   15       	  Very limited   Depth to hard   bedrock 	    1.00     	  Very limited   Depth to hard   bedrock   Cutbanks cave	    1.00    0.10		1.00	
291: Rock outcrop	50	    Not rated	   	    Not rated		    Not rated		
Eagleye	   25   	  Very limited   Slope 	    1.00	  Very limited   Depth to soft   bedrock	1.00	  Very limited   Depth to bedrock 	    1.00	
	į į	Depth to soft	1.00	Slope	1.00	Slope	1.00	
		Low strength   Shrink-swell	1.00  0.78 	Cutbanks cave	0.10	Droughty   Gravel content   Content of large   stones	0.80  0.71  0.08	
Atchee	15     	Very limited   Depth to hard   bedrock   Slope	  1.00    0.63	bedrock	  1.00    0.63		1.00	
	     	Content of large   stones		-		Gravel content  Slope Content of large	0.88	
300: Regracic	       80 	    Very limited   Low strength   Shrink-swell	        1.00	!	        1.00  0.03	stones      Somewhat limited   Gravel content	        0.90	
305: Celavar	     50   	  Somewhat limited   Frost action     Depth to hard	      0.50    0.35	bedrock	      1.00    0.10	    Somewhat limited   Depth to bedrock 	      0.35	
Atarque	     35     	bedrock    Very limited   Depth to hard   bedrock   Frost action	      1.00    0.50	    Very limited   Depth to hard   bedrock	j I		    1.00    1.00	
308: Fikel	   50   	    Very limited   Low strength   Shrink-swell 	      1.00  1.00	  Somewhat limited   Too clayey   Cutbanks cave	      0.28  0.10	    Not limited     	       	

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	đ	   Shallow excavati   	ons	   Lawns and landscaping     	
	     	Rating class and   limiting features	1	Rating class and   limiting features		Rating class and limiting features	Value
308: Venzuni	  -  40     	  Very limited   Low strength   Shrink-swell   Flooding	    1.00  1.00  0.40	Cutbanks cave	    1.00  1.00  0.50	    Very limited   Too clayey   	      1.00   
310: Parkelei	  -   80   	  Somewhat limited   Shrink-swell   Frost action	      0.50  0.50	  Somewhat limited   Cutbanks cave 	      0.10 	  Not limited   	
312: Bluewater	  -  90       	Very limited   Low strength   Shrink-swell   Frost action   Flooding	  1.00    0.50  0.50  0.40	saturated zone Too clayey	  0.95    0.12  0.10	  Not limited       	
315: Flugle	  -   50   	  Very limited   Low strength   Shrink-swell   Frost action	    1.00  0.78  0.50	  Somewhat limited   Cutbanks cave 	      0.10 	  Not limited     	
Fragua	 -  40 	  Somewhat limited   Frost action	    0.50	  Somewhat limited   Cutbanks cave	    0.10	  Not limited   	
316: Royosa	  -  80   	  Somewhat limited   Slope 	      0.01 	  Very limited   Cutbanks cave   Slope	    1.00  0.01	!	0.01
317: Highdye	  -  35         	Very limited   Depth to hard   bedrock   Low strength   Shrink-swell   Slope	  1.00    1.00  1.00  0.37	bedrock	  1.00    0.37  0.28  0.10		  1.00  0.37
Evpark	 -  30     	Somewhat limited   Depth to hard   bedrock   Shrink-swell   Frost action	  0.90    0.50  0.50	  Very limited   Depth to hard   bedrock   Cutbanks cave	  1.00    0.10	  Somewhat limited   Depth to bedrock     Droughty	    0.90    0.01
Bryway	 -  20 	  Very limited   Low strength 	1.00	Somewhat limited   Depth to soft   bedrock	    0.95 	  Somewhat limited   Depth to bedrock 	į
	   	Shrink-swell   Frost action 	1.00  0.50 	Too clayey Cutbanks cave	0.28  0.10 	Droughty   	0.22

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct.  of  map  unit	streets	   Shallow excavati   	ons	Lawns and landsca	ping	
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
320:	   						
Parkelei	   45   	  Somewhat limited   Shrink-swell   Frost action	0.50	  Somewhat limited   Cutbanks cave 	0.10	  Not limited   	
Fraguni	   40     	  Somewhat limited   Frost action   	0.50	  Very limited   Cutbanks cave   Depth to dense   layer	  1.00  0.50	  Not limited     	       
325: Venzuni	   90     	  Very limited   Low strength   Shrink-swell   Flooding	  1.00  1.00  0.40	!	    1.00  1.00	  Very limited   Too clayey 	1.00
332: Evpark	     50 	    Very limited   Low strength 	      1.00	    Very limited   Depth to hard   bedrock	      1.00	    Somewhat limited   Depth to bedrock	      0.06
	     	Shrink-swell Frost action Depth to hard bedrock	0.50  0.50  0.06	Cutbanks cave	0.10     	 	     
Arabrab	   40     	  Very limited   Depth to hard   bedrock   Low strength	  1.00    1.00	bedrock	  1.00    0.10		  1.00    0.73
	   	Frost action     Shrink-swell	0.50	 		Content of large   stones	0.01
225		 			į		
335: Venadito	   85     	  Very limited   Flooding   Low strength   Shrink-swell	  1.00  1.00  1.00	!	  1.00  1.00  0.80	  Very limited   Flooding   Too clayey 	  1.00  1.00
336: Nuffel	     45   	  Very limited   Flooding   Low strength   Shrink-swell	    1.00  1.00  0.50	  Somewhat limited   Flooding   Too clayey   Cutbanks cave	    0.80  0.50  0.10	    Very limited   Flooding   	      1.00
Venadito	   35     	  Very limited   Shrink-swell   Flooding   Low strength	  1.00  1.00  1.00	  Very limited   Too clayey   Cutbanks cave   Flooding	  1.00  1.00  0.80	  Very limited   Too clayey   Flooding 	  1.00  1.00

Table 10b.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	streets	d	Shallow excavations		Lawns and landscaping	
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value   
338: Zyme	50	Very limited Depth to soft		    Very limited   Depth to soft		Very limited Depth to bedrock	
		bedrock   Low strength   Shrink-swell   Slope	  1.00  1.00  1.00	bedrock   Slope   Too clayey	  1.00  0.12  0.10		1.00
Lockerby	40         	Very limited   Low strength     Shrink-swell   Slope	  1.00    1.00  0.16	bedrock   Slope	  0.79    0.16  0.12  0.10	   Slope	  0.80    0.16  0.01
345: Rock outcrop	40	    Not rated	   	    Not rated		    Not rated 	   
Tuces	40           	   Very limited   Slope   Low strength   Shrink-swell	  1.00  1.00    1.00 	Depth to soft bedrock	  1.00  0.90    0.50  0.10	Content of large   stones   Gravel content	  0.97
350: Toldohn	         	  Very limited   Depth to soft   bedrock   Low strength   Shrink-swell   Slope   	  1.00    1.00  1.00  1.00	bedrock   Slope   Too clayey	1.00    1.00  0.28  0.10		  1.00  1.00
Vesserra	30           	Depth to hard   bedrock   Frost action   Slope	1.00    0.50  0.01 	1 -	1.00	Depth to bedrock	1.00
Rock outcrop	20	  Not rated 		Not rated 		  Not rated 	 
351: Rock outcrop	   60 	  Not rated 	   	  Not rated 	 	  Not rated 	   

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct.  Local roads and   of   streets  map    unit			Shallow excavati     	ons	Lawns and landsca	ping
	     			Rating class and   limiting features	1		Value
351: Vessilla	30		1.00		1 1.00	    Very limited   Depth to bedrock	1.00
		Frost action   Slope	0.50  0.01 	Cutbanks cave	0.10  0.01 		1.00  0.03    0.01
352: Zia	     80 	    Not limited   	     	    Somewhat limited   Cutbanks cave 	0.10	    Not limited   	     
353: Mido	90	  Not limited 	     	  Very limited   Cutbanks cave	    1.00	  Somewhat limited   Droughty	0.01
354: Knifehill	   80     	  Very limited   Low strength   Shrink-swell   Frost action	  1.00  1.00  0.50	  Somewhat limited   Too clayey   Cutbanks cave	0.12	  Not limited   	
355: Rizno	   35     	  Very limited   Depth to hard   bedrock   Slope 	    1.00    0.16	bedrock	    1.00    0.16  0.10	   Droughty	  1.00    1.00  0.16
Tekapo	30   30	Very limited   Depth to soft   bedrock   Shrink-swell   Slope   Low strength	1.00    1.00	bedrock   Slope   Cutbanks cave	  1.00    1.00  0.10  0.03		  1.00    1.00  1.00
Rock outcrop	20	  Not rated 	   	  Not rated 	   	  Not rated 	   
357: Heshotauthla	   85     	Very limited Flooding Low strength Shrink-swell	  1.00  1.00  1.00	  Somewhat limited   Too clayey   Flooding   Cutbanks cave	  0.82  0.60  0.10	  Very limited   Sodium content   Too clayey   Flooding   Droughty	  1.00  1.00  0.60  0.01
360: Hosta	45	  Very limited   Low strength   Shrink-swell   Frost action	  1.00  1.00  0.50	  Somewhat limited   Too clayey   Cutbanks cave 	    0.28  0.10	  Not limited     	

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct.   of  map  unit	streets	d	Shallow excavati	ons	Lawns and landsca	ping
	     	Rating class and   limiting features	Value	Rating class and   limiting features	1		Value
360: Concho	     40   	  Very limited   Low strength   Shrink-swell   Flooding	    1.00  1.00  0.40	  Somewhat limited   Too clayey   Cutbanks cave	      0.28  0.10	    Not limited   	       
361: Monpark	   80       	  Very limited   Low strength   Shrink-swell 	    1.00  1.00 		    1.00  0.71    0.50	  Very limited   Too clayey   Depth to bedrock	    1.00  0.71 
365: Vessilla	   55       	  Very limited   Depth to hard   bedrock   Frost action   Slope	  1.00    0.50  0.01	bedrock Cutbanks cave	  1.00    0.10  0.01	  Very limited   Depth to bedrock     Droughty   Slope	  1.00    0.99  0.01
Rock outcrop	35	  Not rated		  Not rated		  Not rated	
366: Bosonoak	   95       	  Very limited   Low strength   Frost action   Shrink-swell	    1.00  0.50  0.22	  Somewhat limited   Cutbanks cave   	      0.10   	  Not limited       	
367: Chunkmonk	   85           	  Very limited   Depth to hard   bedrock   Frost action 	  1.00    0.50   	  Very limited   Depth to hard   bedrock   Cutbanks cave 	  1.00    0.10   	Very limited   Depth to bedrock   Droughty   Gravel content   Content of large   stones	  1.00  1.00
368: Simitarq	   60         		  1.00    1.00  0.50	  Very limited   Depth to hard   bedrock   Cutbanks cave 	  1.00    0.10	Very limited   Depth to bedrock   Droughty   Content of large   stones	1.00
Celavar	   20       	  Somewhat limited   Frost action     Depth to hard   bedrock	  0.50    0.35	  Very limited   Depth to hard   bedrock   Cutbanks cave	  1.00    0.10	  Somewhat limited   Depth to bedrock     	  0.35     

Table 10b.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	streets		Shallow excavations		Lawns and landscaping	
	     		Value   		1		Value   
375: Todest	     60   	  Somewhat limited   Depth to hard   bedrock   Frost action	0.84	  Very limited   Depth to hard   bedrock   Cutbanks cave	      1.00    0.10		į
Shadilto	     25 	    Very limited   Depth to hard	        1.00	    Very limited   Depth to hard	į Į		0.01   
	           	bedrock   Frost action     	  0.50       	bedrock   Cutbanks cave     	  0.10       	!	
376: Todest	   80       	  Somewhat limited   Depth to hard   bedrock   Frost action	  0.90    0.50	  Very limited   Depth to hard   bedrock   Cutbanks cave	  1.00    0.10	Depth to bedrock	į
380: Berryhill	     50 	  Very limited   Low strength   Shrink-swell	      1.00  1.00	  Very limited   Cutbanks cave   Too clayey	      1.00  0.72	    Very limited   Too clayey 	      1.00
Casamero	   45       	   Very limited   Depth to soft   bedrock   Low strength   Shrink-swell	  1.00    1.00  1.00	Very limited   Depth to soft   bedrock   Cutbanks cave   Too clayey	  1.00    1.00  1.00	Depth to bedrock	  1.00    1.00  0.84
385: Mcorreon	   65       	  Very limited   Low strength     Shrink-swell   Slope	    1.00    1.00  1.00	  Very limited   Slope   Too clayey   Cutbanks cave	1.00    0.50		    1.00    1.00  0.75
Rock outcrop	   20 	[	   	  Not rated 	   	  Not rated 	;   
390: Banquito	   90     	Somewhat limited   Frost action     Depth to hard   bedrock	  0.50    0.06	  Very limited   Depth to hard   bedrock   Cutbanks cave		  Somewhat limited   Depth to bedrock   	    0.06   

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati	ons	Lawns and landscaping	
	     	Rating class and   limiting features	Value	Rating class and   limiting features	Value		Value
395:	   	 			 	 	
Cabezon	60   	Very limited   Depth to hard   bedrock	1.00	Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to bedrock	1.00
	į	Shrink-swell	1.00	Too clayey	0.50	Content of large stones	1.00
		Low strength	1.00	Cutbanks cave	0.10	Droughty   Gravel content	0.99
Mcorreon	   30   	  Very limited   Low strength 	1   1.00	  Somewhat limited   Too clayey 	    0.50	  Somewhat limited   Content of large   stones	    0.01
		Shrink-swell	0.50	Cutbanks cave	0.10		
400: Shoemaker	     45 	    Somewhat limited   Depth to hard	      0.64	    Very limited   Depth to hard	1.00	    Somewhat limited   Depth to bedrock	0.65
	   	bedrock   Frost action 	  0.50 	bedrock   Cutbanks cave 	  0.10 	   Content of large   stones	  0.01 
Stozuni	   35   	Very limited Depth to hard bedrock Frost action	  1.00    0.50	bedrock	  1.00    0.10	  Very limited   Depth to bedrock     Droughty	  1.00    1.00
402						Broagney	
403: Valnor	   50   	  Very limited   Low strength   Shrink-swell	  1.00  1.00 	Depth to soft bedrock	  0.50  0.15 	Somewhat limited   Depth to bedrock   Slope	0.16
	 	Slope 	0.01	Cutbanks cave   Slope	0.10	 	
Techado	   30 	  Very limited   Depth to soft   bedrock	    1.00	  Very limited   Depth to soft   bedrock	1.00	  Very limited   Depth to bedrock 	    1.00
	     	Low strength Shrink-swell Slope	1.00  1.00  1.00	Slope Too clayey Cutbanks cave	1.00  0.50  0.10	Droughty Too clayey Slope Gravel content	1.00  1.00  1.00  0.11
404: Rock outcrop	35	    Not rated		  Not rated		    Not rated	
Techado	   35   	  Very limited   Depth to soft   bedrock	    1.00 	bedrock	    1.00	  Very limited   Depth to bedrock 	  1.00
	       	Low strength Shrink-swell Slope	1.00  1.00  1.00 	Slope   Too clayey   Cutbanks cave 	1.00  0.50  0.10 	Slope   Droughty   Gravel content   Content of large   stones	1.00  0.77  0.11  0.01

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati	ons	Lawns and landsca	ping
	     		Value				Value   
404: Stozuni	     25           		   1.00   0.50   0.16	bedrock Slope	       1.00   0.16   0.10 		  1.00  0.16  0.08
405:		 	ì	 	i	! 	
Fortwingate	50         	Very limited   Low strength   Shrink-swell   Depth to hard   bedrock	  1.00    1.00  0.79	bedrock Too clayey	  1.00    0.12  0.10	Somewhat limited   Depth to bedrock	  0.80    0.08
Owlrock	   35             	   Very limited   Depth to hard   bedrock   Content of large   stones   Frost action	  1.00    1.00    0.50	   Very limited   Depth to hard   bedrock   Content of large   stones   Cutbanks cave	  1.00    1.00    0.10	Very limited   Depth to bedrock       Droughty       Content of large   stones   Gravel content	1.00
406: Polich	   90         	  Very limited   Flooding     Low strength   Shrink-swell   Frost action	  1.00    1.00  0.50  0.50	saturated zone	  0.99    0.80  0.10	  Very limited   Flooding   	    1.00     
407: Cinnadale	   50             	  Very limited   Depth to hard   bedrock   Frost action   Slope 	  1.00    0.50  0.16 	  Very limited   Depth to hard   bedrock   Slope   Cutbanks cave	  1.00    0.16  0.10 		  1.00  1.00  0.16
Heckly	35	  Very limited   Slope     Shrink-swell   Depth to hard   bedrock	  1.00    0.50  0.01 	   Very limited   Depth to hard   bedrock   Slope   Too clayey     Cutbanks cave	  1.00    1.00  0.12    0.10	Very limited   Gravel content	İ

Table 10b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati   	ons	Lawns and landsca	ping
	   	Rating class and   limiting features	Value   	Rating class and   limiting features	Value	Rating class and   limiting features	Value
408:	<u> </u> 		į Į		į Į		į Į
Mirabal	50   	Very limited   Slope 	  1.00 	Very limited   Depth to hard   bedrock	  1.00 	Very limited   Droughty 	1.00
	   	Frost action Depth to hard bedrock	0.50 0.46	Cutbanks cave   Slope 	1.00	Slope   Depth to bedrock	1.00
		Content of large   stones	0.01	Content of large   stones	0.01	 	
Zuni	40	  Very limited   Shrink-swell 	    1.00	Very limited   Depth to hard   bedrock	1.00	  Somewhat limited   Depth to bedrock 	    0.71
	į	Depth to hard bedrock	0.71	Cutbanks cave	1.00	Droughty	0.25
		Low strength   Slope	0.22	Too clayey	0.03	Slope 	0.01
409:		 	 			 	
Rauster	60     	Very limited   Low strength   Shrink-swell   Slope	  1.00  1.00  1.00	Too clayey	  1.00  0.12  0.10	Very limited   Slope   	  1.00 
Rock outcrop	30	  Not rated	   	  Not rated	   	  Not rated 	
410:							
Montillo	50   	Very limited   Low strength	  1.00 	Very limited   Depth to hard   bedrock	1.00	Somewhat limited   Depth to bedrock 	0.29
	   	Shrink-swell   Depth to hard   bedrock	1.00  0.29	Cutbanks cave Too clayey	1.00	Slope   Content of large   stones	0.16
	į	Slope	0.16	Slope	0.16	Gravel content	0.02
Tsoodzil	40	  Very limited   Low strength   Shrink-swell   Slope	  1.00  1.00  1.00	  Very limited   Too clayey   Cutbanks cave   Slope	  1.00  1.00  1.00	  Very limited   Gravel content   Slope 	  1.00  1.00
411: Ligocki	45	    Very limited   Low strength	      1.00	    Very limited   Cutbanks cave	      1.00	    Not limited 	     
		Shrink-swell	1.00	Too clayey	0.12		
Robolata	   35   	  Very limited   Flooding   Low strength   Shrink-swell	  1.00  1.00  0.50	  Very limited   Cutbanks cave   Flooding   Too clayey	  1.00  0.60  0.12	  Somewhat limited   Flooding   	  0.60 
		Frost action	0.50	 		 	

Table 10b.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit 	streets	đ	   Shallow excavati     	ons	   Lawns and landsca     	ping
	     	Rating class and   limiting features	Value   	Rating class and   limiting features		Rating class and   limiting features	Value
412: Rock outcrop	     50	    Not rated	     	    Not rated	     	    Not rated	
Rionutria	   25   	Content of large   stones	1.00	bedrock	1.00	stones	İ
	       	Depth to hard bedrock Low strength Shrink-swell Slope	0.90    0.78  0.50  0.16	stones Slope Cutbanks cave	1.00    0.16  0.10		0.90    0.68  0.16  0.06
Zaster	   25           	bedrock	1.00    0.71    0.50	bedrock   Cutbanks cave     Slope	1.00    1.00    1.00	-	  0.99  0.97
413: Morclay	     85 	  Very limited   Low strength   Shrink-swell	      1.00  1.00	!	      1.00  0.50	    Very limited	1.00
414: Zunalei	     50 	  Somewhat limited   Frost action	      0.50	    Somewhat limited   Cutbanks cave	      0.10	    Not limited 	
Corzuni	   40 	  Somewhat limited   Frost action	    0.50	  Somewhat limited   Cutbanks cave	0.10	  Not limited 	   
415: Tsoodzil	   60       	  Very limited   Low strength     Shrink-swell   Slope	    1.00    1.00  1.00	   Slope	    1.00    1.00  0.50	  Very limited   Content of large   stones   Slope	    1.00    1.00
Rubble Land	   20 	  Not rated 	   	  Not rated 		  Not rated 	   
416: Rock outcrop	     70	    Not rated	     	    Not rated		    Not rated	
Bluesky	   20         	  Very limited   Depth to hard   bedrock   Slope 	  1.00    0.16	bedrock	  1.00    0.16  0.10		  1.00    1.00  0.16

Table 10b.--Building Site Development--Continued

Map symbol   F and soil name    m  u		streets	d	   Shallow excavati   	ons	   Lawns and landsca   	ping
	     		Value		Value	   Rating class and   limiting features 	Value
418:	   						
Asaayi	40	  Very limited   Depth to hard   bedrock	  1.00 	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to bedrock 	1.00
	   	Low strength Shrink-swell Frost action Slope	1.00  0.50  0.50  0.01	Cutbanks cave   Slope 	0.10  0.01 	Droughty   Slope 	0.77  0.01 
Osoridge	35	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to hard   bedrock	1.00	  Very limited   Depth to bedrock 	1.00
	       	Low strength   Shrink-swell   Slope 	1.00  1.00  0.01 	Too clayey Cutbanks cave Slope	0.12  0.10  0.01 	Droughty Gravel content Content of large stones Slope	0.79  0.71  0.08    0.01
419:							
Fortwingate	35           	Very limited   Low strength     Shrink-swell   Slope   Depth to hard   bedrock	  1.00    1.00  1.00  0.79	Very limited   Depth to hard   bedrock   Slope   Too clayey   Cutbanks cave	  1.00    1.00  0.12  0.10	Very limited   Content of large   stones   Slope   Depth to bedrock   Droughty	1.00
Cinnadale	   30 	  Very limited   Depth to hard   bedrock	    1.00	  Very limited   Depth to hard   bedrock	    1.00	  Very limited   Depth to bedrock 	1.00
	     	Content of large stones Frost action Slope	0.95    0.50  0.16	Content of large stones Slope Cutbanks cave	0.95    0.16  0.10	Content of large stones Droughty Slope	1.00    1.00  0.16
Rock outcrop	20	  Not rated	 	  Not rated	 	    Not rated 	 
420: Seco	   85     	  Very limited   Low strength   Shrink-swell   Flooding	  1.00  1.00  0.40	:	    1.00  0.10	  Not limited   	
425: Montillo	50	    Very limited   Low strength	1.00	  Very limited   Depth to hard	1.00	    Somewhat limited   Depth to bedrock	0.10
	     	   Shrink-swell   Depth to hard   bedrock	  1.00  0.10 	bedrock   Too clayey   Cutbanks cave 	  0.88  0.10	Droughty Content of large stones	  0.04  0.01 
		Content of large   stones	0.01	Content of large   stones	0.01	 	

Table 10b.--Building Site Development--Continued

Map symbol and soil name	  Pct.   of  map  unit	streets	d	   Shallow excavati   	ons	   Lawns and landsca   	ping
	     		Value		Value		Value
425: Canoneros	     35 	  Very limited   Depth to hard   bedrock	      1.00	  Very limited   Depth to hard   bedrock	1.00		į
	     	Low strength   Shrink-swell 	1.00  1.00 	Too clayey Cutbanks cave	0.72  0.10 	Droughty   Content of large   stones	1.00  0.92 
430: Montillo	   80 	  Very limited   Low strength 	    1.00	  Very limited   Depth to hard   bedrock	    1.00	  Somewhat limited   Depth to bedrock 	    0.01 
	     	Shrink-swell     Depth to hard   bedrock	1.00    0.01	Cutbanks cave     Too clayey 	1.00    1.00 	Content of large stones	0.01     
435: Tsoodzil	   50       	  Very limited   Low strength   Shrink-swell   Slope	    1.00  1.00  1.00	  Very limited   Too clayey   Cutbanks cave   Slope	    1.00  1.00  1.00	  Very limited   Slope   Gravel content   Content of large   stones	    1.00  0.79  0.38
Amcec	   40       	  Very limited   Slope   Frost action   	  1.00  0.50 	  Very limited   Cutbanks cave   Slope   	  1.00  1.00   	Very limited   Gravel content   Droughty   Slope   Content of large   stones	  1.00  1.00  1.00  0.26
440: Chivato	   90       		    1.00  1.00  1.00	  Very limited   Cutbanks cave   Too clayey   Ponding	    1.00  1.00  1.00	  Very limited   Too clayey   Ponding 	      1.00  1.00
525: Silcat	   85   	  Very limited   Low strength   Shrink-swell	    1.00  1.00	  Very limited   Cutbanks cave   Too clayey	    1.00  0.50	  Not limited 	
550: Bryway	   50   	  Very limited   Low strength     Shrink-swell	      1.00    1.00	  Somewhat limited   Depth to soft   bedrock   Too clayey	      0.29    0.28	  Somewhat limited   Depth to bedrock 	      0.29 
Galzuni	     35   	Frost action    Very limited   Low strength   Shrink-swell	0.50      1.00  1.00	Cutbanks cave    Somewhat limited   Too clayey   Cutbanks cave	0.10      0.28  0.10	    Not limited   	         

Table 10b.--Building Site Development--Continued

	  Pct.   of  map  unit	streets	Local roads and streets		ons	Lawns and landscaping		
	     						Value	
555: Parkelei	       45			    Somewhat limited   Cutbanks cave				
Evpark	   35         	Shrink-swell     Frost action	0.50	bedrock Cutbanks cave		  Somewhat limited   Depth to bedrock     	  0.10     	
560: Flugle	     45 	!		    Somewhat limited   Cutbanks cave	0.10	    Not limited 	     	
Teczuni	   35       	Low strength	1.00	Too clayey	  0.12  0.10 	!		
561: Flugle	   50 	  Somewhat limited   Frost action		!	0.10	  Not limited 	   	
Plumasano	   40 	1		  Somewhat limited   Cutbanks cave	    0.10	  Not limited   	     	
565: Plumasano	   65   	Slope		!	    1.00  1.00	  Very limited   Slope 	1.00	
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   	
566: Bamac	   90         	  Very limited   Slope     	  1.00       	Cutbanks cave	  1.00  1.00   	!	  1.00  1.00  1.00  0.01	
575: Ramah	   45   	  Very limited   Low strength   Shrink-swell   Frost action	    1.00  0.50  0.50	  Somewhat limited   Cutbanks cave 	      0.10 	  Not limited     		
Pescado	   35             	  Very limited   Depth to hard   bedrock   Low strength   Shrink-swell   Frost action	  1.00    1.00  0.50  0.50	  Very limited   Depth to hard   bedrock   Cutbanks cave 	  1.00    0.10   		  1.00    0.73   	

Table 11a.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	absorption fields		Sewage lagoons	
	     				Value
8: Water	    100 	    Not rated 	 	    Not rated 	       
10: Tsosie	35	  Very limited   Restricted   permeability   Flooding	    1.00    0.40		0.53
Councelor	30	    Somewhat limited   Restricted   permeability	j I	Slope    Very limited   Seepage	0.01      1.00
Blancot	     20   	Flooding      Very limited   Filtering   capacity	 	Slope      Very limited	0.40  0.01      1.00    0.01
11: Doakum	     60 	  Somewhat limited   Restricted   permeability	      0.46		      1.00
Betonnie	   25   	  Very limited   Filtering   capacity 	      1.00 	Slope    Very limited   Seepage     Slope	0.03      1.00    0.33
12: Calladito	     55   	    Very limited   Filtering   capacity	      1.00	  Very limited   Seepage     Slope	      1.00    0.09
Elias	30	  Very limited   Restricted   permeability	    1.00 	    Very limited	1.00

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   Septic tank   of   absorption fields   map   unit			Sewage lagoons		
	     	Rating class and   limiting features			Value   	
13: Councelor	     60     	  Very limited   Filtering   capacity   Restricted   permeability   Flooding	    1.00    0.46    0.40		    1.00    0.40    0.33	
Calladito	   30   	  Very limited   Filtering   capacity	    1.00 	  Very limited   Seepage     Slope	  1.00    0.33	
14: Councelor	     30   	    Somewhat limited   Flooding   	      0.40	    Very limited   Seepage   Slope   Flooding	      1.00  0.91  0.40	
Eslendo	   30   	  Very limited   Depth to bedrock	1.00	bedrock	  1.00 	
Calladito	   25     	Slope    Very limited   Filtering   capacity 	0.96      1.00 	Slope    Very limited   Seepage     Slope	1.00      1.00    0.33	
16: Starlake	   85     	  Very limited   Restricted   permeability   Flooding	1.00	  Somewhat limited   Flooding     Slope	0.40	
22: Querencia	     50 	  Very limited   Restricted   permeability	1	  Somewhat limited   Slope 	0.91	
Lavodnas	   35   	  Very limited   Depth to bedrock 		  Very limited   Depth to soft   bedrock	1.00	
30: Orlie	     45     	Slope        Very limited   Restricted   permeability	0.01        1.00 	Slope      Somewhat limited   Seepage   Slope	1.00        0.53    0.09	

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	absorption fields		Sewage lagoons	
	     	Rating class and   limiting features			Value
30: Tinian	   40       	  Very limited   Depth to bedrock     Restricted   permeability		bedrock	    1.00    0.33
40: Nuffel	   90     	  Very limited   Flooding   Restricted   permeability	1.00		1.00
42: Suwanee	   90       	  Very limited   Flooding   Restricted   permeability	    1.00  1.00		    1.00  0.53 
44: Suwanee	   90       	  Very limited   Flooding   Restricted   permeability	  1.00  1.00 		    1.00  1.00 
45: Nutreeah	   90         	  Very limited   Restricted   permeability   Depth to   saturated zone   Flooding	  1.00    1.00    0.40	  Somewhat limited   Depth to   saturated zone   Flooding	  1.00    0.40 
47: Conchovar	   90         	  Very limited   Restricted   permeability   Depth to   saturated zone   Flooding	  1.00    1.00    0.40	saturated zone	    0.92    0.40 
49: Concho	   85       	  Very limited   Restricted   permeability   Flooding	  1.00    0.40	  Somewhat limited   Flooding   	0.40
51: Kwakina	   90       	  Very limited   Flooding   Filtering   capacity	  1.00  1.00 	-	  1.00  1.00 

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   Septic tank   of   absorption fields   map   unit		Sewage lagoons		
	     	Rating class and   limiting features	Value	Rating class and limiting features	Value
52: Zuniven	   90         	  Very limited   Flooding   Filtering   capacity   Restricted   permeability	    1.00  1.00    1.00	Very limited Flooding Seepage	    1.00  1.00   
53: Hawaikuh	   80     	  Very limited   Restricted   permeability	    1.00 	Not limited	       
54: Venadito	   90         	  Very limited   Flooding   Restricted   permeability   Depth to   saturated zone	  1.00  1.00    1.00	Very limited Flooding Depth to saturated zone	  1.00  0.71 
55: Sparham	   95       	  Very limited   Flooding   Restricted   permeability	    1.00  1.00	Very limited Flooding Seepage	    1.00  0.53
60: Redpen	   90     	  Very limited   Restricted   permeability	    1.00 	Somewhat limited Seepage	0.53
100: Norkiki	   45       	  Very limited   Depth to bedrock     Restricted   permeability	:	Very limited  Depth to hard  bedrock  Seepage  Slope	  1.00    1.00    0.33
Kimnoli	   40     	  Very limited   Depth to bedrock   		  Very limited	  1.00    0.54  0.09
110: Benally	   60       	  Very limited   Restricted   permeability 	      1.00   	Somewhat limited Seepage Slope	    0.53    0.09

Table 11a.--Sanitary Facilities--Continued

and soil name	  Pct.   of  map  unit	of absorption fields ap		Sewage lagoons		
	     	Rating class and   limiting features	1	Rating class and limiting features	Value	
110: Fruitland	   25     	  Very limited   Filtering   capacity 	      1.00   	Very limited Seepage Slope	      1.00    0.09	
111: Yelives	   85   	  Very limited   Filtering   capacity	      1.00	  Very limited   Seepage	1.00	
	   	Restricted permeability Flooding	0.82    0.40	-	0.40    0.01	
115: Razito	     45   	  Very limited   Filtering   capacity	      1.00	  Very limited   Seepage     Slope	    1.00    0.33	
Shiprock	   40   	  Very limited   Filtering   capacity 	    1.00 	Very limited   Seepage   Slope	1.00	
116: Fajada	     30   	  Very limited   Depth to bedrock     Restricted	1	Very limited Depth to soft bedrock Slope	      1.00    0.09	
Huerfano	   30     	permeability    Very limited   Depth to bedrock 		Very limited Depth to soft bedrock Slope	    1.00    0.09	
Benally	   25     	  Very limited   Restricted   permeability   Depth to bedrock	  1.00    0.94	bedrock	  0.84    0.01	
118: Farb	   35       	  Very limited   Depth to bedrock   		Very limited Depth to hard bedrock Slope Seepage	    1.00    0.91  0.28	
Chipeta	   30     	  Very limited   Depth to bedrock     Slope		  Very limited   Depth to soft   bedrock	  1.00    1.00	

Table 11a.--Sanitary Facilities--Continued

and soil name	of map	Pct.   Septic tank   of   absorption fields   map   unit		Sewage lagoons		
	     	Rating class and   limiting features		Rating class and   limiting features	Value	
118: Rock outcrop	       25	    Not rated		    Not rated		
120: Doak	     55 	  Somewhat limited   Restricted   permeability	0.46	  Very limited   Seepage	1.00	
Shiprock	     30   	  Very limited   Filtering   capacity	      1.00 	Slope    Very limited   Seepage     Slope	0.01      1.00    0.33	
121: Badland	       90	      Not rated	     	      Not rated		
122: Farb	     45     	    Very limited   Depth to bedrock   		  Very limited   Depth to hard   bedrock   Slope	    1.00    0.67	
Rock outcrop	   45 	  Not rated 	   	  Not rated 	   	
125: Sanfeco	   75       	  Very limited   Restricted   permeability   Filtering   capacity   Flooding	  1.00    1.00    0.40	  Very limited   Seepage     Flooding	  1.00    0.40	
130: Chipeta	     40   	    Very limited   Depth to bedrock     Slope	:	  Very limited   Depth to soft   bedrock   Slope	    1.00    1.00	
Badlands	   30	  Not rated	į	  Not rated	 	
Moncisco	   15           	  Very limited   Filtering   capacity   Slope 	  1.00    1.00   	Very limited Seepage Slope Content of large stones	  1.00    1.00  0.16	

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	of map	Pct.   Septic tank   of   absorption fields   map   unit		Sewage lagoons		
	     	Rating class and   limiting features		Rating class and   limiting features	Value	
150:	 	 	 	 		
Riverwash	65     	-	  1.00  1.00 	!	  1.00  1.00 	
Escawetter	25         	Very limited   Flooding   Filtering   capacity   Depth to   saturated zone	  1.00  1.00    1.00	Seepage	  1.00  1.00    1.00	
160:				 		
Escawetter	40     	Very limited   Flooding   Filtering   capacity	  1.00  1.00	-	  1.00  1.00	
		Depth to saturated zone	0.94	Depth to saturated zone	0.39	
Riverwash	   35     	  Very limited   Flooding   Filtering   capacity	    1.00  1.00	!	  1.00  1.00	
Razito	   15   	  Very limited   Filtering   capacity	    1.00 	  Very limited   Seepage     Slope	  1.00    0.09	
205:	   			 		
Penistaja	45	  Not limited   		  Very limited   Seepage   Slope	1.00	
Tintero	   40 	  Very limited   Filtering   capacity	1.00	  Very limited   Seepage 	1   1.00	
		 		Slope 	0.67 	
208: Marianolake	   85     	  Very limited   Filtering   capacity 	    1.00 	  Very limited   Seepage     Slope	  1.00    0.33	
210: Marianolake	     50 	  Very limited   Restricted   permeability	      1.00	    Very limited   Seepage 	1.00	
	   	permeability   	   	   Slope 	  0.3 	

Table 11a.--Sanitary Facilities--Continued

and soil name	Pct. of map unit	f   absorption fields		Sewage lagoons	
	     		1	Rating class and limiting features	Value
210: Skyvillage	     30     	    Very limited   Depth to bedrock   		Very limited Depth to hard bedrock Seepage Slope	    1.00    0.53  0.33
212: Rehobeth	   90         	  Very limited   Flooding   Restricted   permeability   Ponding	  1.00  1.00    1.00	-	  1.00  1.00 
215: Viuda	   35       	  Very limited   Depth to bedrock     	1	Very limited Depth to hard bedrock Seepage Slope	    1.00    0.53  0.09
Penistaja	   30   	  Not limited   	     	  Very limited   Seepage   Slope	  1.00  0.09
Rock outcrop	25	  Not rated 		Not rated	   
220: Hagerwest	   50       	  Very limited   Depth to bedrock     	1	Very limited  Depth to hard  bedrock  Seepage  Slope	  1.00    1.00  0.09
Bond	   35       	  Very limited   Depth to bedrock     	1	Very limited Depth to hard bedrock Seepage Slope	  1.00    0.53  0.33
225: Aquima	   40   41 	  Somewhat limited   Restricted   permeability	      0.72 	Somewhat limited   Seepage   Slope	    0.53    0.09
Hawaikuh	   40   	  Very limited   Restricted   permeability	    1.00 	  Very limited   Seepage     Slope	  1.00    0.09

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	absorption fields		   Sewage lagoons   		
	     	Rating class and   limiting features	1		Value	
230: Sparank	   40   	  Very limited   Flooding   Restricted   permeability	    1.00  1.00	  Very limited   Flooding	1.00	
San Mateo	35       	  Very limited   Flooding   Restricted   permeability	  1.00  1.00 	  Very limited   Flooding   Seepage 	  1.00  1.00 	
Zia	20       	   Very limited   Filtering   capacity   Flooding	  1.00    0.40	Very limited   Seepage	  1.00    0.40  0.01	
235: Notal	   45   	  Very limited   Restricted   permeability   Flooding	1.00	  Somewhat limited   Flooding 	0.40	
Hamburn	   40   	  Very limited   Flooding   Restricted   permeability	  1.00  1.00	  Very limited   Flooding   	  1.00   	
240: Breadsprings	   35         	  Very limited   Ponding   Restricted   permeability   Flooding	    1.00  0.50    0.40	Seepage	   1.00  1.00   0.40	
Nahodish	   35       	  Very limited   Restricted   permeability   Ponding   Flooding	1.00	   Seepage	  1.00    0.50  0.40	
241: Mentmore	   85     	  Very limited   Restricted   permeability	1.00	  Somewhat limited   Slope 	0.33	
242: Gish	   45       	  Very limited   Restricted   permeability   Flooding	  1.00    0.40	İ	0.40	

Table 11a.--Sanitary Facilities--Continued

and soil name	  Pct.   of  map  unit	absorption fields		Sewage lagoons   	
	     			Rating class and limiting features	Value
242: Mentmore	     35   	    Very limited   Restricted   permeability	      1.00	Somewhat limited Slope	      0.33 
244: Buckle	   85   	  Very limited   Restricted   permeability	    1.00 		    0.50    0.33
245: Buckle	     35     	    Very limited   Restricted   permeability 	        1.00	Slope  Very limited  Seepage  Slope	      1.00    0.33
Gapmesa	   30         	   Very limited   Depth to bedrock   Restricted   permeability		bedrock	  1.00    0.50    0.01
Barboncito	   25   	  Very limited   Depth to bedrock   		Very limited Depth to hard bedrock Slope	  1.00    0.01
250: Hospah	     35   	  Very limited   Depth to bedrock     Slope		bedrock	      1.00    1.00
Skyvillage	   30         	Very limited   Depth to bedrock	i I	  Very limited	    1.00    0.67  0.28
Rock outcrop	   25 	  Not rated 	 	Not rated	     
255: Farview	   50     	Depth to bedrock	1.00	bedrock Seepage	  1.00    1.00  1.00
Rock outcrop	   35   	  Not rated   	     	  Not rated 	     

Table 11a.--Sanitary Facilities--Continued

		 I		 	
and soil name				Sewage lagoons	
	     	Rating class and   limiting features		Rating class and   limiting features	
258: Eagleye	     40 	    Very limited   Depth to bedrock		bedrock	      1.00    1.00
Atchee	     35   	  Very limited   Depth to bedrock	    1.00	  Very limited   Depth to hard   bedrock	    1.00
	   	Content of large   stones	0.98   	Content of large   stones   Slope	0.91
Rock outcrop	20	  Not rated 	     	  Not rated 	
260: Quarries and Pits	     95 	    Not rated 	     	    Not rated 	     
261: Coal Mine Lands	    100	    Not rated 	   	    Not rated 	
265: Uranium Mined Lands-	     95 	    Not rated 	   	    Not rated 	
270: Alesna	   70       	Slope	1.00  1.00 	Depth to soft bedrock	  1.00  0.26 
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   
275: Eldado	   85       	capacity	1.00	  Very limited   Seepage     Slope 	    1.00    0.09
280: Azabache	   85       	  Very limited   Restricted   permeability 	    1.00   	  Somewhat limited   Slope     Seepage	0.67

Table 11a.--Sanitary Facilities--Continued

and soil name	  Pct.   of  map  unit	absorption fields		Sewage lagoons	
	     	Rating class and   limiting features	1		Value
290: Rock outcrop	     45	    Not rated		    Not rated	
Westmion	   30   	  Very limited   Depth to bedrock 		  Very limited   Depth to soft   bedrock	    1.00
		Slope	1.00	Slope	1.00
Skyvillage	   15     	Very limited   Depth to bedrock     Slope		Very limited   Depth to hard   bedrock   Seepage   Slope	  1.00    1.00  0.67
201			į	Siepe	
291: Rock outcrop	50	  Not rated		  Not rated	
Eagleye	   25 	  Very limited   Depth to bedrock		  Very limited   Depth to soft   bedrock	1.00
		Slope	1.00	!	1.00
Atchee	   15   	  Very limited   Depth to bedrock 		  Very limited   Depth to hard   bedrock	1.00
	   	Slope   Content of large   stones	0.63	· -	1.00
300: Regracic	     80 	  Very limited   Restricted   permeability	      1.00	    Somewhat limited   Slope 	      0.33
			İ	   Seepage 	0.28
305: Celavar	50	  Very limited   Depth to bedrock			1.00
		Restricted	0.46	bedrock Seepage	0.53
		permeability		   Slope	0.33
Atarque	   35   	  Very limited   Depth to bedrock 		  Very limited   Depth to hard   bedrock	1 1.00
	 	 	i 	Seepage   Slope	0.53
308: Fikel	     50	    Very limited   Restricted	      1.00	    Somewhat limited   Seepage	      0.65
	     	permeability   		Seepage     Slope 	

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   of  map  unit	absorption fiel	ds	Sewage lagoons   	
	     	Rating class and   limiting features	1		Value
308: Venzuni	   40   41   1	  Very limited   Restricted   permeability   Flooding	1.00	  Somewhat limited   Seepage     Flooding   Slope	      0.53    0.40  0.09
310: Parkelei	   80     	  Very limited   Restricted   permeability	1.00	  Somewhat limited   Seepage     Slope	0.53
312: Bluewater	   90         	  Very limited   Restricted   permeability   Depth to   saturated zone   Flooding	    1.00    1.00    0.40	  Very limited   Depth to   saturated zone   Flooding	  1.00    0.40
315: Flugle	   50   	  Very limited   Restricted   permeability 	    1.00 	  Very limited   Seepage     Slope	  1.00    0.09
Fragua	40	  Not limited   	     	  Very limited   Seepage   Slope	  1.00  0.67
316: Royosa	   80     	  Very limited   Filtering   capacity   Slope	1.00	  Very limited   Seepage     Slope	1.00
317: Highdye	   35     	  Very limited   Depth to bedrock     Slope		  Very limited   Depth to hard   bedrock   Slope   Seepage	    1.00    1.00  0.28
Evpark	   30         	  Very limited   Depth to bedrock     Restricted   permeability		  Very limited   Depth to hard   bedrock   Slope     Seepage	  1.00    0.67    0.53

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   of  map  unit	absorption fields		Sewage lagoons	
	     				Value
317: Bryway	20	    Very limited   Depth to bedrock   		Very limited Depth to soft bedrock Slope	    1.00    0.67
320: Parkelei	45	  Somewhat limited   Restricted   permeability	    0.46 	  Very limited   Seepage     Slope	    1.00    0.33
Fraguni	40	  Very limited   Filtering   capacity   Restricted   permeability	  1.00    0.46		  1.00    0.33
325: Venzuni	90	  Very limited   Restricted   permeability   Flooding		  Somewhat limited   Flooding     Slope	0.40
332: Evpark	     50 	  Very limited   Depth to bedrock	1.00	bedrock	1 1.00
Arabrab	40	Restricted   permeability      Very limited   Depth to bedrock	1	   Seepage      Very limited	0.33    0.28    1.00    0.33
335: Venadito	     85   	  Very limited   Flooding   Restricted   permeability	1.00	-	1.00
336: Nuffel	45	  Very limited   Flooding   Restricted   permeability	    1.00  1.00 	-	    1.00  0.53    0.01
Venadito	35	  Very limited   Flooding   Restricted   permeability	  1.00  1.00 	  Very limited   Flooding	  1.00  0.01 

Table 11a.--Sanitary Facilities--Continued

and soil name	  Pct.   of  map  unit	absorption fields		Sewage lagoons	
	     	Rating class and   limiting features		Rating class and   limiting features	:
338: Zyme	   50 	  Very limited   Depth to bedrock		  Very limited   Depth to soft   bedrock	1.00
		Slope	1.00		1.00
Lockerby	   40     	  Very limited   Restricted   permeability   Depth to bedrock	1.00	bedrock	  1.00    1.00
		Slope	0.16		
345: Rock outcrop	40	    Not rated		    Not rated	   
Tuces	   40 	  Very limited   Restricted   permeability	1	  Very limited   Depth to soft   bedrock	    1.00
		Depth to bedrock	1.00		1.00
350:	 	 		 	
Toldohn	35   	Very limited   Depth to bedrock 		Very limited   Depth to soft   bedrock	  1.00 
		Slope	1.00	Slope	1.00
Vessilla	30   	  Very limited   Depth to bedrock		  Very limited   Depth to hard   bedrock	1.00
	 	Slope	0.01	!	1.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   
351: Rock outcrop	   60	  Not rated	į Į	  Not rated	
Vessilla	   30 	  Very limited   Depth to bedrock		  Very limited   Depth to hard   bedrock	1.00
		Slope 	0.01	Slope   Seepage	1.00
352:		 		[ 	
Zia	80   	  Very limited   Filtering   capacity	1.00	  Very limited   Seepage 	1.00
	 	 		Slope 	0.09

Table 11a.--Sanitary Facilities--Continued

	Pct. of map unit	absorption fields		Sewage lagoons	
	     				Value
353: Mido	     90     	    Very limited   Filtering   capacity 	      1.00   	     Very limited   Seepage     Slope	    1.00    0.09
354: Knifehill	   80 	  Very limited   Restricted   permeability	    1.00	  Somewhat limited   Slope 	0.09
355: Rizno	   35       	  Very limited   Depth to bedrock     Slope 		  Very limited   Depth to hard   bedrock   Slope   Seepage	    1.00    1.00  0.28
Tekapo	   30     	  Very limited   Depth to bedrock     Slope		  Very limited   Depth to soft   bedrock   Slope	  1.00    1.00
Rock outcrop	   20	  Not rated	 	  Not rated	
357: Heshotauthla	   85   85   	  Very limited   Flooding   Restricted   permeability	      1.00  1.00	    Very limited   Flooding	      1.00   
360: Hosta	   45     	  Very limited   Restricted   permeability	    1.00 	  Somewhat limited   Seepage     Slope	    0.53    0.09
Concho	   40     	  Very limited   Restricted   permeability   Flooding	  1.00    0.40	  Somewhat limited   Flooding   	    0.40   
361: Monpark	   80       	  Very limited   Restricted   permeability   Depth to bedrock	1.00	bedrock	    1.00    0.33

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.  of  map  unit	absorption fields		Sewage lagoons	
	     		:	   Rating class and   limiting features	
365: Vessilla	     55     	  Very limited   Depth to bedrock     Slope	:	  Very limited   Depth to hard   bedrock   Seepage   Slope	    1.00    1.00  1.00
Rock outcrop	35	  Not rated 	   	  Not rated 	
366: Bosonoak	   95     	  Very limited   Restricted   permeability	    1.00 	  Somewhat limited   Seepage     Slope	0.65
367: Chunkmonk	   85     	  Very limited   Depth to bedrock 		  Very limited   Depth to hard   bedrock   Slope	      1.00    0.91
368: Simitarq	   60       	  Very limited   Depth to bedrock   	:	  Very limited   Depth to hard   bedrock   Slope   Seepage	    1.00    0.67  0.28
Celavar	   20         	  Very limited   Depth to bedrock     Restricted   permeability		  Very limited   Depth to hard   bedrock   Slope     Seepage	  1.00    0.67    0.53
375: Todest	   60       	  Very limited   Depth to bedrock     Restricted   permeability		  Very limited   Depth to hard   bedrock   Slope     Seepage	  1.00    0.67    0.53
Shadilto	25         	  Very limited   Depth to bedrock     		Very limited Depth to hard bedrock Seepage Slope	  1.00    1.00  0.67

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	Septic tank   absorption fields		Sewage lagoons	
	     	Rating class and   limiting features			Value
376: Todest	     80     	  Very limited   Depth to bedrock     Restricted   permeability		  Very limited   Depth to hard   bedrock   Slope     Seepage	    1.00    0.67    0.53
380: Berryhill	     50 	  Very limited   Restricted   permeability	      1.00	  Somewhat limited   Slope 	      0.67
Casamero	   45   	  Very limited   Depth to bedrock   	1	  Very limited   Depth to soft   bedrock   Slope	  1.00    0.91
385: Mcorreon	     65   	  Very limited   Restricted   permeability   Slope	    1.00    1.00	    Very limited   Slope   	      1.00 
Rock outcrop	   20 	  Not rated 	   	  Not rated 	
390: Banquito	   90         	  Very limited   Depth to bedrock     Filtering   capacity	1	  Very limited   Depth to hard   bedrock   Seepage     Slope	  1.00    1.00    0.01
395: Cabezon	     60     	  Very limited   Depth to bedrock   	1	  Very limited   Depth to hard   bedrock   Slope	    1.00    0.67
Mcorreon	   30   	  Very limited   Restricted   permeability	    1.00 	  Somewhat limited   Slope 	    0.67 
400: Shoemaker	   45         	  Very limited   Depth to bedrock     Restricted   permeability		  Very limited   Depth to hard   bedrock   Slope     Seepage	  1.00    0.67    0.53

Table 11a.--Sanitary Facilities--Continued

and soil name	  Pct.   of  map  unit	of   absorption fields map		Sewage lagoons   		
	     	Rating class and   limiting features				
400: Stozumi	     35     	    Very limited   Depth to bedrock   		  Very limited   Depth to hard   bedrock   Seepage   Slope	    1.00    1.00  0.67	
403: Valnor	   50       	permeability Depth to bedrock	1.00	bedrock	    1.00    1.00	
Techado	   30   	  Very limited   Depth to bedrock     Slope		  Very limited   Depth to soft   bedrock   Slope	  1.00    1.00	
404: Rock outcrop	     35	    Not rated	   	    Not rated		
Techado	   35   	  Very limited   Depth to bedrock	1.00	bedrock	1.00	
Stozuni	   25       	  Very limited   Depth to bedrock		Slope 	1.00    1.00  1.00  1.00  0.28	
405: Fortwingate	     50   	  Very limited   Restricted   permeability   Depth to bedrock	1.00	bedrock	    1.00    0.67	
Owlrock	   35       	Very limited Depth to bedrock Content of large stones	1.00	bedrock	  1.00    1.00	
406:	     	     	     	Slope   Seepage 	0.67  0.53 	
Polich	90           	Very limited   Flooding   Restricted   permeability   Depth to   saturated zone	  1.00  1.00    1.00	Very limited   Flooding   Depth to   saturated zone   Seepage	  1.00  1.00    0.53	

Table 11a.--Sanitary Facilities--Continued

	  Pct.   of  map  unit	absorption fields		Sewage lagoons	
	     	Rating class and   limiting features			Value
407: Cinnadale	     50     	    Very limited   Depth to bedrock     Slope		bedrock	    1.00    1.00  1.00
Heckly	   35   	  Very limited   Depth to bedrock     Restricted		bedrock	  1.00    1.00
	     	permeability   Slope	1.00	-	0.28
408: Mirabal	   50 	  Very limited   Depth to bedrock		  Very limited   Depth to hard   bedrock	    1.00
	       	Filtering   capacity   Slope   Content of large   stones	1.00    1.00  0.01	Slope	1.00    1.00  0.01
Zuni	40         	  Very limited   Restricted   permeability   Depth to bedrock   Slope	1.00	bedrock	  1.00    1.00 
409: Rauster	   60       	Very limited   Restricted   permeability   Slope   Depth to bedrock	1.00    1.00	Depth to soft bedrock	  1.00    0.08
Rock outcrop	   30 	  Not rated 	   	  Not rated 	   
410: Montillo	   50       	Very limited   Restricted   permeability   Depth to bedrock   Filtering   capacity   Slope	1.00	bedrock Slope	  1.00    1.00  1.00
Tsoodzil	   40     	  Very limited   Restricted   permeability   Slope 	  1.00    1.00		  1.00     

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   Septic tank   of   absorption fields   map   unit		Sewage lagoons		
		Rating class and   limiting features		Rating class and   limiting features	Value 
411: Ligocki	     45   	  Very limited   Restricted   permeability	1.00	  Somewhat limited   Seepage     Slope	    0.53    0.09
Robolata	   35       	  Very limited   Flooding   Restricted   permeability	  1.00  1.00 	   Flooding   Seepage     Slope	  1.00  1.00    0.09
412: Rock outcrop	50	    Not rated		    Not rated	
Rionutria	25	  Very limited   Depth to bedrock		  Very limited   Depth to hard   bedrock	1.00
	       	Restricted	  1.00    1.00    0.16	Content of large   stones	1.00    1.00 
Zaster	   25           	Very limited   Depth to bedrock   Slope   Content of large   stones	1.00    1.00	Very limited   Depth to hard   bedrock   Slope   Seepage     Content of large   stones	  1.00    1.00  1.00    0.88
413: Morclay	     85   	  Very limited   Restricted   permeability	      1.00	    Somewhat limited   Slope 	      0.09
414: Zunalei	     50 	  Not limited   	     	  Very limited   Seepage   Slope	    1.00  0.67
Corzuni	   40   	  Not limited     	     	  Very limited   Seepage   Slope 	  1.00  0.67
415: Tsoodzil	   60     		    1.00    1.00	  Very limited   Slope 	1.00
Rubble Land	20	  Not rated 	   	  Not rated 	   

Table 11a.--Sanitary Facilities--Continued

and soil name	Pct. of map unit	absorption fields		   Sewage lagoons   	
	   	Rating class and limiting features		Rating class and limiting features	Value
416: Rock outcrop	     70	    Not rated		    Not rated	     
Bluesky	20         	Very limited   Depth to bedrock     Slope		bedrock	  1.00    1.00  0.28
418: Asaayi	   40       	  Very limited   Depth to bedrock     Slope		  Very limited   Depth to hard   bedrock   Slope   Seepage	    1.00    1.00  0.28
Osoridge	   35       	  Very limited   Depth to bedrock     Slope		bedrock	  1.00    1.00  0.28
419: Fortwingate	     35   	  Very limited   Depth to bedrock     Restricted		bedrock	      1.00    1.00
	 	permeability Slope	1.00	   Seepage 	0.28
Cinnadale	30     	Very limited   Depth to bedrock     Content of large	1.00	bedrock	  1.00    1.00
	     	stones   Slope 	  0.16 		į
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   
420: Seco	   85     	  Very limited   Restricted   permeability   Flooding	1.00	İ	0.40

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	absorption fields		Sewage lagoons	
	     	Rating class and   limiting features	:		
425: Montillo	   50           	permeability Depth to bedrock	1.00    1.00  1.00	bedrock   Seepage   Slope	    1.00    1.00  0.33 
Canoneros	   35     	  Very limited   Depth to bedrock   	:	  Very limited   Depth to hard   bedrock   Slope	  1.00    0.33
430: Montillo	   80       	permeability Depth to bedrock	1.00	bedrock	  1.00    1.00  0.33
435: Tsoodzil	   50   	  Very limited   Restricted   permeability   Slope	      1.00    1.00	  Very limited   Slope 	      1.00 
Amcec	   40     	<u> </u>	  1.00    1.00	  Very limited   Slope     Seepage	1.00
440: Chivato	   90     	  Very limited   Restricted   permeability   Ponding	1.00	  Very limited   Ponding 	1.00
525: Silcat	   85   	  Very limited   Restricted   permeability	      1.00	  Somewhat limited   Slope 	0.67
550: Bryway	   50     	  Very limited   Restricted   permeability   Depth to bedrock	1.00	  Very limited   Depth to soft   bedrock   Slope 	1.00

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	absorption field	ds	Sewage lagoons	
	     	Rating class and   limiting features		Rating class and limiting features	Value
550: Galzuni	     35     	  Very limited   Restricted   permeability 	      1.00   	Somewhat limited Seepage Slope	    0.53    0.33
555: Parkelei	   45   	  Not limited   	     	  Very limited   Seepage   Slope	    1.00  0.67
Evpark	   35       	  Very limited   Depth to bedrock     Restricted   permeability	1	Very limited Depth to hard bedrock Slope Seepage	  1.00    0.67    0.53
560: Flugle	     45     	  Somewhat limited   Restricted   permeability 	      0.46 	Very limited   Seepage     Slope	      1.00    0.09
Teczuni	   35   	  Very limited   Restricted   permeability	    1.00 	  Somewhat limited   Slope	    0.09 
561: Flugle	     50 	  Not limited 		Very limited Seepage Slope	    1.00  0.67
Plumasano	   40   	  Somewhat limited   Restricted   permeability	    0.46   	Very limited Seepage Slope	  1.00    0.67
565: Plumasano	     65     	  Very limited   Filtering   capacity   Slope	    1.00    1.00	Very limited Slope Seepage	    1.00    1.00
Rock outcrop	   20	  Not rated		  Not rated	
566: Bamac	   90       	  Very limited   Filtering   capacity   Slope 	    1.00    1.00		    1.00    1.00

Table 11a.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	absorption fiel		   Sewage lagoons   			
	   	Rating class and limiting features		Rating class and   limiting features	Value   		
575:	 			 			
Ramah	45   	Very limited   Restricted   permeability	  1.00 	Somewhat limited   Seepage 	  0.53 		
	İ	  -	į	Slope	0.01		
Pescado	   35       	  Very limited   Depth to bedrock     		  Very limited   Depth to hard   bedrock   Seepage   Slope	  1.00    1.00  0.33		

Table 11b.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct.   of  map  unit	landfill		Area sanitary   landfill 		Daily cover for landfill	
 		Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value   
8: Water	    -  100	      Not rated	       	      Not rated	     	      Not rated	
10: Tsosie	  -  35 	  Somewhat limited   Flooding	0.40	  Somewhat limited   Flooding	0.40	  Not limited 	
Councelor	 -  30 	  Somewhat limited   Flooding		  Somewhat limited   Flooding	0.40	  Somewhat limited   Seepage	0.52
Blancot	 -  20   	  Very limited   Too sandy 	    1.00 	  Not limited   	     	  Very limited   Seepage   Too sandy	  1.00  0.50
11: Doakum	  -   60	    Not limited 	     	    Not limited 	     	    Somewhat limited   Seepage	0.52
Betonnie	 -  25 		    1.00 	  Not limited   	     	  Very limited   Seepage   Too sandy	  1.00  0.50
12: Calladito	   -  55 	    Very limited   Too sandy 	      1.00	    Not limited   	       	  Very limited   Seepage   Too sandy	    1.00  0.50
Elias	 -  30 	  Not limited 	   	  Not limited 	   	  Not limited 	   
13: Councelor	 -  60 	  Very limited   Too sandy   Flooding	  1.00  0.40	  Somewhat limited   Flooding 	0.40	  Very limited   Seepage   Too sandy	  1.00  0.50
Calladito	 -  30   		    1.00 	  Not limited   	     	  Very limited   Seepage   Too sandy	1.00
14: Councelor	    -  30 	    Somewhat limited   Flooding		    Somewhat limited   Flooding	      0.40	    Somewhat limited   Seepage	0.52
Eslendo	-  30   	  Very limited   Depth to bedrock   Slope 		  Somewhat limited   Slope 	    0.96   	  Very limited   Depth to bedrock   Slope 	  1.00  0.96

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	landfill	Trench sanitary   landfill   			Daily cover fo	r
	     		:				Value
14: Calladito	     25   	! -	      1.00	    Not limited 	       	  Very limited   Seepage   Too sandy	      1.00  0.50
16: Starlake	     85 	    Somewhat limited   Flooding	      0.40	    Somewhat limited   Flooding	      0.40	    Not limited 	     
22: Querencia	     50	    Not limited 	     	    Not limited 	   	    Not limited 	     
Lavodnas	35     	  Very limited   Depth to bedrock   Slope		Somewhat limited   Slope 	0.01	Very limited   Depth to bedrock   Slope	  1.00  0.01
30: Orlie	45	    Not limited		    Not limited		    Not limited	
Tinian	40	  Very limited   Depth to bedrock	:	  Not limited 	   	  Very limited   Depth to bedrock	1.00
40: Nuffel	     90   	    Very limited   Flooding	      1.00	    Very limited   Flooding 	      1.00	    Not limited   	     
42: Suwanee	   90 	  Very limited   Flooding	      1.00	  Very limited   Flooding	    1.00	  Not limited   	     
44: Suwanee	   90 	  Very limited   Flooding	    1.00	  Very limited   Flooding	    1.00	  Somewhat limited   Seepage 	    0.52
45: Nutreeah	   90       	saturated zone Too clayey	  1.00    1.00  0.40	saturated zone	  1.00    0.40	  Very limited   Too clayey   	1.00
47: Conchovar	   90         	  Very limited   Depth to   saturated zone   Too clayey   Flooding	    1.00    1.00  0.40	Very limited Depth to saturated zone Flooding	    1.00    0.40	  Very limited   Too clayey   	      1.00     
49: Concho	   85 	  Somewhat limited   Flooding	      0.40	  Somewhat limited   Flooding	0.40	    Not limited   	     

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	landfill	= '			Daily cover for landfill	
	     	Rating class and   limiting features		Rating class and   limiting features			Value
51: Kwakina	     90 	Flooding		  Very limited   Flooding 	      1.00	  Very limited   Seepage   Too sandy	      1.00  0.50
52: Zuniven	90	! -	    1.00	    Very limited   Flooding	    1.00	    Not limited   	
53: Hawaikuh	80	    Not limited 	   	    Not limited 	   	    Not limited 	   
54: Venadito	   90     	Flooding		-		  Very limited   Hard to compact   	    1.00   
55: Sparham	95			  Very limited   Flooding	1.00	    Not limited 	     
60: Redpen	90	    Not limited	     	    Not limited	     	    Not limited 	
100: Norkiki	45	  Very limited   Depth to bedrock		  Not limited	i   	  Very limited   Depth to bedrock	1.00
Kimnoli	40	  Very limited   Depth to bedrock		  Not limited 	   	  Very limited   Depth to bedrock	1.00
110: Benally	į	į	İ	    Not limited 	     	    Not limited 	     
Fruitland	25   	Not limited   	   	Not limited   	   	Somewhat limited   Seepage 	  0.50 
111: Yelives	   85 	  Somewhat limited   Flooding	    0.40	  Somewhat limited   Flooding	    0.40	  Very limited   Seepage 	    1.00
115: Razito	45		    1.00	  Not limited 	     	  Very limited   Seepage   Too sandy	    1.00  0.50
Shiprock	40	  Not limited 	   	  Not limited 	   	  Very limited   Seepage	1.00
116: Fajada	30	    Very limited   Depth to bedrock 		  Not limited 	       	    Very limited   Depth to bedrock 	      1.00

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	landfill	Trench sanitary			   Daily cover fo   landfill 	r
	     		:		1		Value
116: Huerfano	30	  Very limited   Depth to bedrock	:	    Not limited	       	  Very limited   Depth to bedrock	1.00
Benally	25	  Very limited   Depth to bedrock		  Not limited 	   	  Somewhat limited   Depth to bedrock	0.84
118: Farb	35	  Very limited   Depth to bedrock	:	  Not limited 	       	  Very limited   Depth to bedrock   Seepage	1.00
Chipeta	   30   	Depth to bedrock	!	•	    0.63 	  Very limited   Depth to bedrock   Slope	1.00
Rock outcrop	25	  Not rated	   	  Not rated		  Not rated 	
120: Doak	     55	    Not limited	   	    Not limited	   	    Not limited	   
Shiprock	30	  Not limited 	   	  Not limited 	   	  Very limited   Seepage	1.00
121: Badland	     90 	    Not rated 	     	    Not rated 	     	    Not rated 	     
122: Farb	   45   	  Very limited   Depth to bedrock   	!	  Not limited   	       	  Very limited   Depth to bedrock   Seepage   Gravel content	  1.00  0.52  0.14
Rock outcrop	   45 	  Not rated 		  Not rated 	   	  Not rated 	   
125: Sanfeco	   75 		    1.00  0.40	  Somewhat limited   Flooding	0.40	  Very limited   Seepage   Too sandy	    1.00  0.50
130: Chipeta	   40   	  Very limited   Depth to bedrock   Slope	:	  Very limited   Slope 	      1.00	    Very limited   Depth to bedrock   Slope	    1.00  1.00
Badlands	30	  Not rated	 	  Not rated	 	  Not rated	
Moncisco	   15     	  Very limited   Slope   	    1.00   	  Very limited   Slope   	    1.00   	  Very limited   Gravel content   Slope 	  1.00  1.00

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	landfill	У	Area sanitary		Daily cover for landfill	
	     		Value   				Value
150:							
Riverwash	65	Flooding   Seepage   Too sandy	1.00  1.00  1.00	Very limited   Flooding   Seepage 	1.00  1.00 	Very limited   Too sandy   Seepage 	1.00
Escawetter	25         	  Very limited   Flooding   Depth to   saturated zone   Too sandy	  1.00  1.00    1.00	  Very limited   Flooding   Depth to   saturated zone	  1.00  1.00   	Very limited Too sandy Seepage Depth to saturated zone	  1.00  1.00    0.01
160:							
Escawetter	40	Very limited   Flooding   Depth to   saturated zone   Too sandy	  1.00  1.00    1.00	Very limited   Flooding   Depth to   saturated zone	  1.00  1.00 	Very limited   Too sandy   Seepage 	  1.00  1.00 
Riverwash	   35   	  Very limited   Flooding   Seepage   Too sandy	  1.00  1.00  1.00	  Very limited   Flooding   Seepage 	  1.00  1.00	  Very limited   Too sandy   Seepage 	  1.00  1.00
Razito	   15   	  Very limited   Too sandy   	    1.00 	  Not limited     	       	  Very limited   Too sandy   Seepage 	  1.00  1.00
205: Penistaja	45	  Not limited 		  Not limited 		  Somewhat limited   Seepage	0.22
Tintero	40	  Not limited 	 	  Not limited 	   	  Somewhat limited   Seepage	0.52
208: Marianolake	     85   	    Very limited   Too sandy 	      1.00	    Not limited   	       	  Very limited   Seepage   Too sandy	    1.00  0.50
210: Marianolake	     50	    Not limited		    Not limited	   	    Not limited	   
Skyvillage	30	  Very limited   Depth to bedrock	    1.00	  Not limited	   	  Very limited   Depth to bedrock	    1.00
212: Rehobeth	   90     	  Very limited   Flooding   Ponding 	      1.00  1.00	  Very limited   Flooding   Ponding 	      1.00  1.00	    Very limited   Hard to compact   Ponding	    1.00  1.00

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   of  map  unit	landfill	landfill			Daily cover for landfill	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
215:	<u> </u> 	 	j I	 	į Į	 	
Viuda	35	Very limited   Depth to bedrock		Not limited		Very limited   Depth to bedrock	1.00
Penistaja	30	  Not limited 	   	  Not limited 	   	  Somewhat limited   Seepage	0.22
Rock outcrop	 -  25 	  Not rated 	   	  Not rated 	   	  Not rated 	   
220: Hagerwest	   50 	  Very limited   Depth to bedrock		  Not limited   	 	  Very limited   Depth to bedrock   Seepage	    1.00  0.52
Bond	 -  35 	  Very limited   Depth to bedrock		  Not limited 	   	  Very limited   Depth to bedrock	1   1.00
225: Aquima	   -  40	    Not limited	   	    Not limited	   	    Not limited	   
Hawaikuh	j	İ	   	  Not limited	İ	  Not limited	   
230:		  -	į	i I	į	  -	į į
Sparank	40	  Very limited   Flooding	1.00	Very limited   Flooding	1.00	  Not limited 	
San Mateo	 -  35 	  Very limited   Flooding	1   1.00	  Very limited   Flooding	1   1.00	  Not limited 	   
Zia	20	!	    0.40	  Somewhat limited   Flooding	0.40	  Somewhat limited   Seepage	0.52
235: Notal	   -  45 		      0.40	    Somewhat limited   Flooding	0.40	    Not limited 	     
Hamburn	40	  Very limited   Flooding	1 1.00	  Very limited   Flooding	1.00	  Very limited   Carbonate content	1.00
240: Breadsprings	  -   35 	  Very limited   Ponding   Flooding	1.00	  Very limited   Ponding   Flooding	1.00	  Very limited   Ponding 	    1.00
Nahodish	 -  35   	  Very limited   Ponding   Flooding 	    1.00  0.40	  Very limited   Ponding   Flooding 	  1.00  0.40	  Very limited   Ponding   	    1.00 
241: Mentmore	  -   85	    Not limited 	     	    Not limited 	   	    Not limited 	   
242: Gish	   -  45 	    Somewhat limited   Flooding 	    0.40	    Somewhat limited   Flooding 	0.40	    Very limited   Hard to compact 	      1.00

Table 11b.--Sanitary Facilities--Continued

and soil name	Pct.  Of  map  unit	landfill	У	Area sanitary	-	Daily cover for landfill	
	     		Value   	Rating class and   limiting features			Value
242: Mentmore	     35	    Not limited	     	    Not limited	     	    Not limited	     
244: Buckle	     85	  Not limited	 	  Not limited		    Not limited	 
245: Buckle	35	    Not limited 	   	    Not limited 		    Somewhat limited   Seepage	0.50
Gapmesa	   30 	  Very limited   Depth to bedrock		  Not limited 	   	  Very limited   Depth to bedrock	    1.00
Barboncito	   25 	  Very limited   Depth to bedrock		  Not limited 	   	  Very limited   Depth to bedrock	1.00
250: Hospah	     35     	Depth to bedrock		  Very limited   Slope 	      1.00 	! -	1.00
Skyvillage	   30   	  Very limited   Depth to bedrock 		  Not limited   	     	  Very limited   Depth to bedrock   Seepage	  1.00  0.52
Rock outcrop	   25 	  Not rated 	   	  Not rated 		  Not rated 	   
255: Farview	   50     	Depth to bedrock		  Somewhat limited   Slope 	    0.01 	Seepage	  1.00  0.50  0.01
Rock outcrop	   35 	  Not rated 	   	  Not rated 	   	  Not rated 	   
258: Eagleye	   40   	Depth to bedrock		  Very limited   Slope 	 	  Very limited   Depth to bedrock   Slope   Too acid	  1.00  1.00  1.00
Atchee	   35   	  Very limited   Depth to bedrock   Content of large   stones	1.00	  Not limited   	       	  Very limited   Depth to bedrock   Content of large   stones	1
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
260: Quarries and Pits	   95 	  Not rated 	   	  Not rated 	   	  Not rated 	   

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   of  map  unit	landfill	У	   Area sanitary   landfill 		Daily cover for landfill	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and limiting features	Value
261: Coal Mine Lands	    100	    Not rated	     	    Not rated	     	    Not rated	
265: Uranium Mined Lands-	     95	    Not rated 		    Not rated 		    Not rated 	
270: Alesna	   70 	Depth to bedrock		  Very limited   Slope 	1.00	  Very limited   Slope   Depth to bedrock	    1.00  0.26
Rock outcrop	20	  Not rated		  Not rated	 	  Not rated	
275: Eldado	   85     	! -	1.00	  Not limited   	       	  Very limited   Too sandy   Seepage   Gravel content	    1.00  1.00  0.16
280: Azabache	     85 	    Not limited   	       	    Not limited   	       	    Very limited   Gravel content 	1.00
290: Rock outcrop	45	    Not rated		    Not rated	 	    Not rated	
Westmion	   30   		1.00	  Very limited   Slope 	    1.00	  Very limited   Depth to bedrock   Slope	  1.00  1.00
Skyvillage	   15   	  Very limited   Depth to bedrock     Slope		  Not limited   	     	  Very limited   Depth to bedrock   Seepage   Slope	  1.00  0.52
291: Rock outcrop	     50	j		    Not rated	   	Slope    Not rated	   
	İ	  Very limited	    1.00	  Very limited	    1.00 	  Very limited	  1.00  1.00  0.02
Atchee	   15         	Very limited   Depth to bedrock   Slope   Content of large   stones	1.00  0.63		  0.63       	   Very limited   Depth to bedrock   Slope   Content of large   stones   Gravel content	0.63
300: Regracic	   80 	  Not limited   		  Not limited   	       	  Somewhat limited   Gravel content 	0.02

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	landfill	У	   Area sanitary   landfill 		   Daily cover fo   landfill 	r
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
305: Celavar	50	  Very limited   Depth to bedrock	!	    Not limited	     	  Very limited   Depth to bedrock	1.00
Atarque	   35 		    1.00	  Very limited   Depth to bedrock		  Very limited   Depth to bedrock	    1.00
308: Fikel	İ	    Not limited 	     	    Not limited 	     	    Not limited 	     
Venzuni	40   	Somewhat limited   Flooding 	  0.40 	Somewhat limited   Flooding 	  0.40 	Very limited   Hard to compact 	  1.00 
310: Parkelei	   80 	  Not limited 	   	  Not limited 	   	  Not limited 	   
312: Bluewater	   90     	  Very limited   Depth to   saturated zone   Too clayey	  1.00    0.50	  Very limited   Depth to   saturated zone   Flooding	    1.00    0.40	  Somewhat limited   Too clayey     Depth to   saturated zone	    0.50    0.09
		Flooding	0.40		   		
315: Flugle	50	    Not limited 	     	    Not limited 	     	    Somewhat limited   Seepage	0.52
Fragua	40	  Not limited 	 	  Not limited 	   	  Somewhat limited   Seepage	0.52
316: Royosa	   80       	  Very limited   Too sandy   Slope 	    1.00  0.01 	  Somewhat limited   Slope   	      0.01   	  Very limited   Too sandy   Seepage   Slope	    1.00  1.00  0.01
317: Highdye	   35     	Depth to bedrock	  1.00  1.00  0.37				  1.00  1.00  0.37
Evpark	30	  Very limited   Depth to bedrock		  Not limited 	   	  Very limited   Depth to bedrock	1   1.00
Bryway	20	  Very limited   Depth to bedrock	1   1.00	  Not limited 	   	  Very limited   Depth to bedrock	1   1.00
320: Parkelei	   45 	    Not limited   	       	    Not limited   	       	    Somewhat limited   Seepage 	      0.52

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	landfill	Trench sanitary   landfill			Daily cover fo	r
	     			Rating class and   limiting features			Value
320: Fraguni	40	    Very limited   Too sandy	      1.00	    Not limited 	         	  Very limited   Seepage   Too sandy	      1.00  0.50
325: Venzuni	90	    Somewhat limited   Flooding	0.40	  Somewhat limited   Flooding	      0.40	    Very limited   Hard to compact	1
332: Evpark	50	  Very limited   Depth to bedrock		    Not limited 	     	  Very limited   Depth to bedrock	1.00
Arabrab	40       	  Very limited   Depth to bedrock   Too clayey 		  Very limited   Depth to bedrock   	:	  Very limited   Depth to bedrock   Carbonate content   Too clayey	
335: Venadito	   85 	  Very limited   Flooding	    1.00	  Very limited   Flooding	    1.00	  Very limited   Hard to compact 	    1.00
336: Nuffel	   45 	  Very limited   Flooding	    1.00	  Very limited   Flooding	    1.00	  Not limited 	 
Venadito	35	  Very limited   Flooding	    1.00	  Very limited   Flooding	    1.00	  Very limited   Hard to compact	    1.00
338: Zyme	   50     	  -  Very limited   Depth to bedrock   Slope 		  Very limited   Slope 	      1.00 		    1.00  1.00  1.00
Lockerby	40	  Very limited   Depth to bedrock   Slope	!	  Somewhat limited   Slope 	    0.16 	  Very limited   Depth to bedrock   Slope	    1.00  0.16
345: Rock outcrop	40	    Not rated	   	    Not rated	   	    Not rated	   
Tuces	   40     	  Very limited   Slope   Depth to bedrock	  1.00  1.00 	  Very limited   Slope 	    1.00   	  Very limited   Depth to bedrock   Slope   Hard to compact	  1.00  1.00  1.00
350: Toldohn	   35   	  Very limited   Depth to bedrock   Slope	    1.00  1.00	  Very limited   Slope 	    1.00 	  Very limited   Depth to bedrock   Slope	    1.00  1.00

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.  of  map  unit	landfill	Area sanitary   landfill		Daily cover for landfill		
	     		1	Rating class and   limiting features			Value
350: Vessilla	30	Depth to bedrock			      0.01	    Very limited   Depth to bedrock   Slope	    1.00  0.01
Rock outcrop	20	  Not rated 	   	  Not rated 	   	  Not rated 	   
351: Rock outcrop	60	  Not rated	į Į	  Not rated	į Į	  Not rated	į Į
Vessilla	   30       	  Very limited   Depth to bedrock   Slope 		  Somewhat limited   Slope   	    0.01   	  Very limited   Depth to bedrock   Seepage   Slope	  1.00  0.52  0.01
352: Zia	   80 	  Not limited 	     	  Not limited 	     	  Somewhat limited   Seepage 	0.52
353: Mido	90	  Very limited   Too sandy	    1.00	  Not limited 		  Very limited   Seepage   Too sandy	1.00
354: Knifehill	     80 	    Very limited   Too clayey 	      1.00	    Not limited 	     	    Very limited   Too clayey	1.00
355: Rizno	   35     	  Very limited   Depth to bedrock   Slope 		  Somewhat limited   Slope 	    0.16 		  1.00  0.52  0.16
Tekapo	   30   	  Very limited   Depth to bedrock   Slope		  Very limited   Slope 	    1.00 		  1.00  1.00  1.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
357: Heshotauthla	     85 	  Very limited   Flooding	    1.00	  Very limited   Flooding	    1.00	    Very limited   Hard to compact 	1.00
360: Hosta	İ	  Not limited 	     	  Not limited 		  Not limited 	
Concho	40   	Somewhat limited   Flooding 	  0.40 	Somewhat limited   Flooding 	0.40	Not limited   	   

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   of  map  unit	landfill	У	Area sanitary   landfill		Daily cover for landfill	
	     			Rating class and   limiting features			Value
361: Monpark	80	    Very limited   Depth to bedrock		    Not limited		    Very limited   Depth to bedrock   Hard to compact	
365: Vessilla	   55     	Depth to bedrock			0.01		    1.00  0.52  0.01
Rock outcrop	35	  Not rated 	   	  Not rated 	   	  Not rated 	   
366: Bosonoak	95	  Not limited	 	  Not limited	 	  Not limited	
367: Chunkmonk	   85       			  Very limited   Depth to bedrock 		Too acid	1.00
368: Simitarq	   60 	Depth to bedrock		  Very limited   Depth to bedrock		! -	1.00
Celavar	20	  Very limited   Depth to bedrock		  Not limited 	   	  Very limited   Depth to bedrock	1.00
375: Todest	     60 			  Very limited   Depth to bedrock		    Very limited   Depth to bedrock	      1.00
Shadilto	25	   Very limited   Depth to bedrock   	1.00	Very limited   Depth to bedrock 		Carbonate content	
376: Todest	     80   	  Very limited   Depth to bedrock   	      1.00	  Very limited   Depth to bedrock 	      1.00	  Very limited   Depth to bedrock   Carbonate content 	:
380: Berryhill	50	  Not limited 	   	  Not limited 	   	  Very limited   Hard to compact	    1.00
Casamero	   45   	  Very limited   Depth to bedrock 	    1.00 	  Not limited   	       	  Very limited   Depth to bedrock   Hard to compact	    1.00  1.00

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	landfill		Area sanitary		Daily cover for landfill		
	     						Value	
385: Mcorreon	     65 	Too clayey	      1.00  1.00	    Very limited   Slope	      1.00	    Very limited   Too clayey   Slope	    1.00  1.00	
Rock outcrop	20	  Not rated	 	  Not rated	 	  Not rated		
390: Banquito	   90     	Depth to bedrock		!	1.00		1.00	
395: Cabezon	   60   	Depth to bedrock		  Very limited   Depth to bedrock 		  Very limited   Depth to bedrock   Too clayey	1.00	
Mcorreon	30		0.50	  Not limited 	 	Somewhat limited   Too clayey	0.50	
400: Shoemaker	     45 			    Very limited   Depth to bedrock		    Very limited   Depth to bedrock	1.00	
Stozuni	   35   			  Very limited   Depth to bedrock 		! -	1.00	
403: Valnor	     50   	Too clayey		! -		! -	    1.00  1.00  0.01	
Techado	   30     			! -		! -	  1.00  1.00  1.00	
404: Rock outcrop	35	  Not rated	   	  Not rated	 	    Not rated		
Techado	   35     	Depth to bedrock		! -		  Very limited   Depth to bedrock   Too clayey   Slope	  1.00  1.00  1.00	
Stozuni	25         	  Very limited   Depth to bedrock   Slope   	 	  Very limited   Depth to bedrock   Slope   		•	  1.00  0.52  0.16  0.04	

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	landfill	У	   Area sanitary   landfill 		   Daily cover for   landfill 		
	     			Rating class and   limiting features		Rating class and limiting features	Value	
405: Fortwingate	   50   	Depth to bedrock		  Very limited   Depth to bedrock 		Too clayey	    1.00  1.00  1.00	
Owlrock	   35     	  Very limited   Depth to bedrock   Content of large   stones		  Very limited   Depth to bedrock   		  Very limited   Depth to bedrock   Content of large   stones		
406: Polich	   90       	  Very limited   Flooding   Depth to   saturated zone   Too clayey	  1.00  1.00    0.50	Depth to saturated zone	  1.00  1.00   	Somewhat limited   Too clayey   Depth to   saturated zone	  0.50  0.25 	
407: Cinnadale	   50     	  Very limited   Depth to bedrock   Slope 					  1.00  0.90  0.52  0.16	
Heckly	   35       	! -	1	! -		  Very limited   Depth to bedrock   Slope   Gravel content   Too clayey	  1.00  1.00  0.95  0.50	
408: Mirabal	   50         	Very limited   Depth to bedrock   Slope   Seepage   Content of large   stones	1.00  1.00  1.00	Depth to bedrock Slope	1.00	-	1.00  0.99  0.52	
Zuni	   40       	  Very limited   Depth to bedrock   Too clayey   Slope 	  1.00  0.50  0.01	  Very limited   Depth to bedrock   Slope   		   Very limited   Depth to bedrock   Too clayey   Gravel content   Slope	  1.00  0.50  0.24  0.01	
409: Rauster	   60       	  Very limited   Depth to bedrock   Too clayey   Slope 	  1.00  1.00  1.00	  Very limited   Slope   Depth to bedrock   	1.00	  Very limited   Too clayey   Hard to compact   Slope   Depth to bedrock	  1.00  1.00  1.00  0.08	

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	landfill	   Area sanitary   landfill 		   Daily cover for   landfill 		
	     	Rating class and limiting features	Value 	Rating class and limiting features		Rating class and limiting features	Value
409: Rock outcrop	     30	    Not rated	     	    Not rated 	     	    Not rated	
410: Montillo	   50     	Depth to bedrock	1	Seepage		Too clayey	  1.00  1.00  1.00  0.16
Tsoodzil	   40     	  Very limited   Too clayey   Slope 	    1.00  1.00 	  Very limited   Slope   	    1.00   	  Very limited   Too clayey   Hard to compact   Slope	  1.00  1.00  1.00
411: Ligocki	     45	    Not limited	   	  Not limited		    Not limited	   
Robolata	j	  Very limited	İ	  Very limited	İ	  Somewhat limited	0.52
412: Rock outcrop	50	    Not rated	   	    Not rated	   	    Not rated	   
Rionutria	   25       	   Very limited   Depth to bedrock   Content of large   stones   Too clayey   Slope	1.00			! -	
Zaster	   25           	Very limited   Depth to bedrock   Slope   Content of large   stones	1.00	Depth to bedrock	1.00	Very limited   Depth to bedrock   Slope   Content of large   stones   Gravel content   Seepage	1.00
413: Morclay	   85   	  Very limited   Too clayey 	      1.00 	  Not limited   	       	  Very limited   Too clayey   Too compact	1.00
414: Zunalei	50	    Very limited   Seepage	      1.00	    Very limited   Seepage	1.00	    Somewhat limited   Seepage	0.52
Corzuni	   40 	  Very limited   Seepage 	    1.00 	  Very limited   Seepage 	    1.00 	  Somewhat limited   Seepage 	    0.52 

Table 11b.--Sanitary Facilities--Continued

	Pct. of map unit	landfill	У	Area sanitary		Daily cover for landfill		
	     	Rating class and   limiting features					Value   	
415: Tsoodzil	     60 	Too clayey	      1.00  1.00	  Very limited   Slope	      1.00	  Very limited   Too clayey   Slope	    1.00  1.00	
Rubble Land	   20	  Not rated 	 	  Not rated 	   	  Not rated 		
416: Rock outcrop	     70	    Not rated 	     	    Not rated 	   	    Not rated 	     	
Bluesky	   20     	Depth to bedrock Too sandy	:	<u> </u>			  1.00  1.00  1.00  0.16	
418: Asaayi	   40     	Depth to bedrock Too clayey				! -	    1.00  0.50  0.01	
Osoridge	   35       	Depth to bedrock Too clayey		Slope		! -	1.00	
419:	 	 	 	 	 	 		
Fortwingate	35     	Depth to bedrock	:	Depth to bedrock	:	! -	  1.00  1.00  0.50	
Cinnadale	   30         		1.00			! -		
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   	
420: Seco	   85     	  Very limited   Too clayey   Flooding	    1.00  0.40	  Somewhat limited   Flooding 	    0.40 	  Very limited   Too clayey   Hard to compact 	    1.00  1.00	

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	  Pct.   of  map  unit	landfill	У	Area sanitary   landfill 		   Daily cover for   landfill 		
	     	   Rating class and   limiting features		Rating class and   limiting features			Value	
425: Montillo	   50     	Depth to bedrock Too clayey Seepage Content of large	1.00  1.00  1.00	Seepage		Too clayey Hard to compact Content of large	1.00	
Canoneros	   35     	Depth to bedrock		  Very limited   Depth to bedrock 		! -	1.00	
430: Montillo	   80       		    1.00  1.00  1.00	  Very limited   Depth to bedrock   Seepage 		Too clayey	  1.00  1.00  1.00	
435: Tsoodzil	   50   		  1.00  0.50	  Very limited   Slope 	    1.00 	  Very limited   Slope   Too clayey   Gravel content	  1.00  0.50  0.10	
Amcec	   40     	  Very limited   Seepage   Slope 	    1.00  1.00 	  Very limited   Seepage   Slope 	    1.00  1.00 	  Very limited   Gravel content   Slope   Seepage	  1.00  1.00  0.52	
440: Chivato	   90     	  Very limited   Too clayey   Ponding	    1.00  1.00	  Very limited   Ponding 	    1.00 	  Very limited   Too clayey   Hard to compact   Ponding	  1.00  1.00  1.00	
525: Silcat	     85 	    Not limited 	       	    Not limited   	       	    Very limited   Hard to compact	      1.00	
550: Bryway	   50 	    Very limited   Depth to bedrock	    1.00	  Not limited 	     	    Very limited   Depth to bedrock	1.00	
Galzuni	35	  Not limited 	   	Not limited	   	  Not limited 	   	
555: Parkelei	   45 	  Not limited 	   	  Not limited 	   	  Somewhat limited   Seepage	    0.52	
Evpark	   35   	  Very limited   Depth to bedrock 	    1.00	  Not limited   	     	  Very limited   Depth to bedrock 	1   1.00	

Table 11b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct.   of  map  unit	Trench sanitary   landfill		   Area sanitary   landfill 		Daily cover for   landfill		
	     	Rating class and   limiting features	Value	Rating class and   limiting features	Value	Rating class and   limiting features	Value	
560: Flugle	45	    Not limited		    Not limited	     	    Somewhat limited   Seepage	0.52	
Teczuni	35	  Very limited   Too clayey	1   1.00	  Not limited 	   	  Very limited   Too clayey	1.00	
561: Flugle	50	    Not limited 	     	    Not limited 		    Somewhat limited   Seepage	0.52	
Plumasano	40	  Not limited 	 	  Not limited 	 	  Somewhat limited   Seepage	0.52	
565: Plumasano	     65   	    Very limited   Slope 	      1.00 	  Very limited   Slope 	      1.00	  Very limited   Slope   Seepage	      1.00  0.52	
Rock outcrop	20	  Not rated		Not rated	ļ	  Not rated		
566: Bamac	   90       	  Very limited   Too sandy   Slope 	    1.00  1.00 	  Very limited   Slope   	    1.00     	  Very limited   Too sandy   Seepage   Gravel content   Slope	    1.00  1.00  1.00	
575: Ramah	45	  Not limited 	   	  Not limited 	 	  Somewhat limited   Too clayey	0.50	
Pescado	   35       	  Very limited   Depth to bedrock   Seepage   Too clayey	  1.00  1.00  0.50	  Very limited   Depth to bedrock   Seepage 		  Very limited   Depth to bedrock   Too clayey 	  1.00  0.50 	

Table 12a. -- Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct.  of  map  unit	gravel	e of	Potential source of sand		
	   	   Rating class 	Value	   Rating class 	Value	
8: Water	    100	      Not rated 	     	      Not rated	     	
10: Tsosie	   35 	  Poor   Bottom layer   Thickest layer	0.00	    Fair   Bottom layer   Thickest layer	    0.00  0.04	
Councelor	   30 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	  0.00  0.09	
Blancot	20	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	  0.09  0.56	
11:						
Doakum	60   	Poor   Bottom layer   Thickest layer		Fair   Thickest layer   Bottom layer	  0.04  0.09	
Betonnie	   25   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	  0.09  0.14	
12: Calladito	   55 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	    0.70  0.70	
Elias	   30   	  Poor   Bottom layer   Thickest layer 	0.00	  Fair   Bottom layer   Thickest layer 	  0.00  0.03	
13:			į			
Councelor	60   	Poor   Bottom layer   Thickest layer	0.00	Fair   Bottom layer   Thickest layer	0.00	
Calladito	30	  Poor   Bottom layer   Thickest layer 	0.00	  Fair   Thickest layer   Bottom layer 	  0.49  0.70	

Table 12a.--Construction Materials--Continued

Map symbol and soil name	Pct.		ce of	   Potential source of   sand		
and soff hane	map  unit	į		Salu   		
	 _l	Rating class	Value	Rating class	Value	
14:		 		 		
Councelor	-  30   	Poor   Bottom layer   Thickest layer	0.00	Fair   Bottom layer   Thickest layer 	  0.09  0.09	
Eslendo	30		0.00	Poor   Bottom layer   Thickest layer	0.00	
Calladito	- 25   	  Poor   Bottom layer   Thickest layer 	0.00	  Fair   Thickest layer   Bottom layer 	0.49	
16: Starlake	 -  85   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00	
22: Querencia	 -  50 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00	
Lavodnas	 -  35   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00	
30: Orlie	 -  45 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.00	
Tinian	 -  40   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	
40: Nuffel	  -  90   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00	
42: Suwanee	 -  90   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00	
44: Suwanee	  -  90   	  Poor   Bottom layer   Thickest layer 	0.00	·	  0.03  0.09	

Table 12a. -- Construction Materials -- Continued

	  Pct.   of  map  unit	gravel	e of	Potential source of sand		
	   	   Rating class	Value	   Rating class 	Value	
45: Nutreeah	     90 	 	0.00	<u> </u>	0.00	
47: Conchovar	     90   	  Poor   Bottom layer   Thickest layer	0.00	<u> </u>	0.00	
49: Concho	   85   	  Poor   Bottom layer   Thickest layer	0.00	<u> </u>	0.00	
51: Kwakina	     90   	  Poor   Bottom layer   Thickest layer	0.00	<u> </u>	0.33	
52: Zuniven	     90 	  Poor   Bottom layer   Thickest layer	    0.00  0.00	·	    0.00  0.57	
53: Hawaikuh	     80   	  Poor   Bottom layer   Thickest layer	    0.00  0.00	<u> </u>	0.00	
54: Venadito	     90   	  Poor   Bottom layer   Thickest layer	0.00	<u> </u>	0.00	
55: Sparham	   95   	  Poor   Bottom layer   Thickest layer	    0.00  0.00	<u> </u>	0.00	
60: Redpen	   90     	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.00	
100: Norkiki	   45   	  Poor   Bottom layer   Thickest layer	0.00	<u> </u>	0.00	
Kimnoli	40   40 	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	<u> </u>	  0.00  0.00	

Table 12a.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	gravel	e of	Potential source of sand		
	   	   Rating class 	Value	   Rating class 	Value	
110: Benally	     60 	  Poor   Bottom layer   Thickest layer	0.00		0.03	
Fruitland	   25     	  Poor   Bottom layer   Thickest layer 	1	  Fair   Bottom layer   Thickest layer	  0.12  0.62	
111: Yelives	   85     	  Poor   Bottom layer   Thickest layer	0.00	!	    0.00  0.70	
115: Razito	   45   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.39	
Shiprock	40   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	0.08	
116: Fajada	     30 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	    0.00  0.00	
Huerfano	   30   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00	
Benally	25     	  Poor   Bottom layer   Thickest layer 	0.00	  Fair   Bottom layer   Thickest layer 	0.00	
118: Farb	   35 	  Poor   Bottom layer   Thickest layer	•	Poor   Bottom layer   Thickest layer	0.00	
Chipeta	   30     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	
Rock outcrop	25	  Not rated 	 	  Not rated 		
120: Doak	     55     	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer 	    0.04  0.09	

Table 12a. -- Construction Materials -- Continued

	Pct.  Potential source of   of   gravel   map     unit			Potential source of sand	
	   	   Rating class 	Value	   Rating class 	Value
120: Shiprock	     30   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	0.08
121: Badland	     90 	    Not rated 	     	    Not rated 	   
122: Farb	     45 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	    0.00  0.00
Rock outcrop	45	  Not rated		  Not rated	
125: Sanfeco	   75 	•	0.00	  Fair   Thickest layer   Bottom layer	    0.00  0.56
130: Chipeta	     40 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
Badlands	30	  Not rated 		  Not rated 	
Moncisco	   15   	!	0.00	  Poor   Bottom layer   Thickest layer	0.00
150: Riverwash	     65   	  Poor   Bottom layer   Thickest layer	0.00	  Good   Bottom layer 	0.90
Escawetter	   25   	  Poor   Bottom layer   Thickest layer		  Good   Thickest layer 	0.19
160: Escawetter	40	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	    0.66  0.93
Riverwash	   35     	  Poor   Bottom layer   Thickest layer 	  0.00  0.00		    0.90 

Table 12a. -- Construction Materials -- Continued

Map symbol and soil name	  Pct.   of  map  unit	gravel		Potential source of sand	
	   	   Rating class 	Value	   Rating class 	Value
160: Razito	       15 	  -  Poor   Bottom layer   Thickest layer	0.00	    Good   Bottom layer	      0.90
205: Penistaja	     45   	  Poor   Bottom layer   Thickest layer	    0.00  0.00	-	    0.04  0.07
Tintero	   40   	  Poor   Bottom layer   Thickest layer	0.00	-	  0.09  0.70
208: Marianolake	     85   	  Poor   Bottom layer   Thickest layer	0.00	-	    0.06  0.56
210: Marianolake	   50 	  Poor   Bottom layer   Thickest layer		  Fair   Thickest layer   Bottom layer	0.00
Skyvillage	   30   	  Poor   Bottom layer   Thickest layer	0.00	-	0.00
212: Rehobeth	     90   	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	0.00
215: Viuda	     35   	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	0.00
Penistaja	   30   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	  0.04  0.05
Rock outcrop	   25 	  Not rated 	   	  Not rated 	   
220: Hagerwest	     50 	    Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	    0.00  0.09
Bond	   35     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	  0.00  0.00

Table 12a. -- Construction Materials -- Continued

= =	of map	Pct.   Potential source of   of   gravel   map   unit		Potential source of sand	
	 	Rating class	Value	Rating class	Value
225:	   	   			;   
Aquima	40   	  Poor   Bottom layer   Thickest layer	0.00	Poor   Bottom layer   Thickest layer	0.00
Hawaikuh	   40     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	0.00
230: Sparank	   40 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
San Mateo	   35   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.00
Zia	   20     	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.09
235: Notal	   45 	  Poor   Bottom layer   Thickest layer	1	  Fair   Thickest layer   Bottom layer	0.00
Hamburn	   40     	  Poor   Bottom layer   Thickest layer 	0.00	  Fair   Bottom layer   Thickest layer 	0.00
240: Breadsprings	   35 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.00
Nahodish	   35     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00
241: Mentmore	   85     	  Poor   Bottom layer   Thickest layer	  0.00  0.00	  Poor   Bottom layer   Thickest layer	0.00
242: Gish	45   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
Mentmore	35     	  Poor   Bottom layer   Thickest layer 	0.00		0.00

Table 12a.--Construction Materials--Continued

and soil name	Pct. of map unit	gravel	Potential source of sand		
	   	   Rating class 	Value	Rating class	Value
244: Buckle	     85 		0.00	  Poor   Bottom layer   Thickest layer	0.00
245: Buckle	     35 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	0.03
Gapmesa	   30   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00
Barboncito	   25   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00
250: Hospah	     35   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	    0.00  0.00
Skyvillage	   30   	Bottom layer	!	  Poor   Bottom layer   Thickest layer	  0.00  0.00
Rock outcrop	   25 	  Not rated 	   	  Not rated 	
255: Farview	     50 		!	  Poor   Bottom layer   Thickest layer	    0.00  0.00
Rock outcrop	   35 	  Not rated 	   	  Not rated 	   
258: Eagleye	     40 	    Poor   Bottom layer   Thickest layer	:		0.00
Atchee	   35   	  Poor   Bottom layer   Thickest layer	0.00		  0.00  0.00
Rock outcrop	   20 	  Not rated 		  Not rated 	
260: Quarries and Pits	   95   	  Not rated   	     	  Not rated   	

Table 12a. -- Construction Materials -- Continued

and soil name			Potential source of sand		
	   	   Rating class 	Value	   Rating class 	Value
261: Coal Mine Lands	100	      Not rated	       	      Not rated	       
265: Uranium Mined Lands-	     95 	    Not rated 	     	    Not rated 	     
270: Alesna	     70   		0.00	· -	      0.00  0.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   
275: Eldado	     85   	<u> </u>	0.34	·	      0.30  0.34
280: Azabache	     85   	  Fair   Bottom layer   Thickest layer	0.00	-	      0.08  0.08
290: Rock outcrop	     45 	    Not rated 	     	    Not rated 	     
Westmion	   30   		0.00	· -	    0.00  0.00
Skyvillage	   15   	!	0.00	· -	    0.00  0.00
291: Rock outcrop	     50 	    Not rated 	     	    Not rated 	     
Eagleye	   25   	<u> </u>	    0.00  0.00	· -	    0.00  0.00
Atchee	   15     	-	    0.00  0.00	-	    0.00  0.00
300: Regracic	   80     	-	0.00	-	    0.00  0.09

Table 12a. -- Construction Materials -- Continued

and soil name	  Pct.   of  map  unit	gravel	Potential source of gravel		e of
	 	Rating class	Value	Rating class	Value
305:	 				-  
Celavar	   50 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.00
Atarque	   35     	  Poor   Bottom layer   Thickest layer 	    0.00  0.00	·	  0.00  0.00
308: Fikel	   50 	Poor   Bottom layer   Thickest layer	    0.00  0.00	-	0.03
Venzuni	   40   	  Poor   Bottom layer   Thickest layer	  0.00  0.00	-	0.00
310: Parkelei	   80   	  Poor   Bottom layer   Thickest layer	0.00	-	0.00
312: Bluewater	     90   	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	0.00
315: Flugle	     50 	  Poor   Bottom layer   Thickest layer	      0.00  0.00	-	    0.00  0.09
Fragua	   40     	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	-	  0.09  0.09
316: Royosa	   80 	  Poor   Bottom layer   Thickest layer	    0.00  0.00		    0.65  0.98
317: Highdye	   35   	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	  0.00  0.00
Evpark	30	  Poor   Bottom layer   Thickest layer 		  Fair   Bottom layer   Thickest layer 	0.00
Bryway	20     	Poor   Bottom layer   Thickest layer	  0.00  0.00		0.00

Table 12a. -- Construction Materials -- Continued

and soil name	Pct. of map unit	gravel		Potential sourcest sand	ce of
	   	   Rating class 	Value	   Rating class 	Value
320:	   		i i		İ
Parkelei	45   	Poor Bottom layer Thickest layer	0.00	-	0.03
Fraguni	   40   	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	· -	  0.08  0.51
325: Venzuni	90	  Poor   Bottom layer   Thickest layer	0.00	-	0.00
332:			i		i
Evpark	50   	Poor   Bottom layer   Thickest layer	0.00	· -	0.00
Arabrab	40   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
335: Venadito	   85   	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	0.00
336: Nuffel	   45 	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	0.00
Venadito	   35   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
338:		 	i	 	
Zyme	50	Poor   Bottom layer   Thickest layer	0.00	Poor   Bottom layer   Thickest layer	0.00
Lockerby	   40   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00
345: Rock outcrop	40	    Not rated		    Not rated	
Tuces	40   41 	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	  0.00  0.00

Table 12a. -- Construction Materials -- Continued

and soil name	Pct.  Of  map  unit	gravel	Potential source of sand		
	   	   Rating class 	Value	   Rating class 	Value
350: Toldohn	     35 	  Poor   Bottom layer   Thickest layer	0.00	·	0.00
Vessilla	   30   	  Poor   Bottom layer   Thickest layer	0.00		0.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	
351: Rock outcrop	     60	    Not rated 		    Not rated 	
351: Vessilla	30	  Poor   Bottom layer   Thickest layer	0.00		0.00
352: Zia	     80 	<u>-</u>	1	  Fair   Bottom layer   Thickest layer	0.09
353: Mido	     90   	  Poor   Bottom layer   Thickest layer	!	  Fair   Thickest layer   Bottom layer	    0.20  0.70
354: Knifehill	     80   	  Poor   Bottom layer   Thickest layer	    0.00  0.00	  Poor   Bottom layer   Thickest layer	0.00
355: Rizno	     35 	  Poor   Bottom layer   Thickest layer	0.00	·	0.00
Tekapo	   30   		:	  Poor   Bottom layer   Thickest layer	0.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	
357: Heshotauthla	   85     	  Poor   Bottom layer   Thickest layer 	    0.00  0.00		    0.00  0.00

Table 12a. -- Construction Materials -- Continued

and soil name	Potential source of   of   gravel   map   unit		Potential source of sand		
	   	   Rating class 	Value	   Rating class 	Value
360: Hosta	     45 	  Poor   Bottom layer   Thickest layer	0.00	! -	0.00
Concho	   40     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	  0.00  0.00
361: Monpark	   80     	  Poor   Bottom layer   Thickest layer	0.00	!	0.00
365: Vessilla	   55   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
Rock outcrop	   35 	  Not rated 	   	  Not rated 	
366: Bosonoak	     95   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
367: Chunkmonk	   85     	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	0.00
368: Simitarq	   60   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
Celavar	20     	  Poor   Bottom layer   Thickest layer 	0.00	  Fair   Bottom layer   Thickest layer 	0.00
375: Todest	   60 	  Poor   Bottom layer   Thickest layer	0.00	!	0.00
Shadilto	25   25   	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	-	  0.00  0.00
376: Todest	   80     	  Poor   Bottom layer   Thickest layer 	  0.00  0.00		0.00

Table 12a.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	gravel		Potential source of sand	
		   Rating class	Value	   Rating class 	Value
380:	   				-    
Berryhill	50   	Poor   Bottom layer   Thickest layer	0.00	Poor   Bottom layer   Thickest layer	  0.00  0.00
Casamero	   45   	  Poor   Bottom layer   Thickest layer 		  Poor   Bottom layer   Thickest layer 	  0.00  0.00
385: Mcorreon	   65   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
385: Rock outcrop	20	    Not rated 		    Not rated 	     
390: Banquito	     90 	    Poor   Bottom layer   Thickest layer	0.00	    Fair   Bottom layer   Thickest layer	    0.00  0.07
395: Cabezon	     60 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	    0.00  0.00
Mcorreon	30	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00
400: Shoemaker	     45 	  Poor   Bottom layer   Thickest layer	    0.00  0.00	!	    0.00  0.04
Stozuni	   35   	  Poor   Bottom layer   Thickest layer		  Poor   Bottom layer   Thickest layer	  0.00  0.00
403: Valnor	   50 		0.00	  Poor   Bottom layer   Thickest layer	0.00
Techado	30	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
404: Rock outcrop	     35 	    Not rated 		    Not rated 	     

Table 12a. -- Construction Materials -- Continued

and soil name	  Pct.   of  map  unit	f   gravel		Potential source of sand	
	   	   Rating class 	Value	   Rating class 	Value
404: Techado	     35 	•	0.00	  Poor   Bottom layer   Thickest layer	0.00
Stozuni	   25     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	  0.00  0.00
405: Fortwingate	   50   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
405: Owlrock	   35     	•	0.00	  Poor   Bottom layer   Thickest layer	0.00
406: Polich	   90     	-	0.00	  Poor   Bottom layer   Thickest layer	0.00
407: Cinnadale	   50 	•	0.00	  Poor   Bottom layer   Thickest layer	0.00
Heckly	   35     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	0.00
408: Mirabal	   50   	  Fair   Bottom layer   Thickest layer	0.00	  Fair   Bottom layer   Thickest layer	0.00
Zuni	40       	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer 	0.00
409: Rauster	   60   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
Rock outcrop	30	Not rated 		  Not rated 	
410: Montillo	   50   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00

Table 12a.--Construction Materials--Continued

and soil name	of map	Pct.   Potential source of   of   gravel   map   unit		Potential source of sand	
	   	   Rating class 	Value	   Rating class 	Value
410: Tsoodzil	40	  -  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
411: Ligocki	     45 	  Poor   Bottom layer   Thickest layer	0.00		0.00
Robolata	   35   	  Fair   Thickest layer   Bottom layer 	  0.00  0.38	!	0.03
412: Rock outcrop	     50 	    Not rated 		    Not rated 	
Rionutria	   25   	  Poor   Bottom layer   Thickest layer	  0.00  0.00	!	  0.00  0.00
Zaster	   25   	  Fair   Bottom layer   Thickest layer	1	  Poor   Bottom layer   Thickest layer	  0.00  0.00
413: Morclay	   85   	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00
414: Zunalei	   50 	  Poor   Bottom layer   Thickest layer		  Fair   Bottom layer   Thickest layer	0.08
Corzuni	   40   	  Poor   Bottom layer   Thickest layer 	  0.00  0.00	!	  0.08  0.08
415: Tsoodzil	   60 	Bottom layer	0.00		0.00
Rubble Land	   20 	  Not rated 		  Not rated 	
416: Rock outcrop	     70	    Not rated		    Not rated 	
Bluesky	20	  Poor   Bottom layer   Thickest layer 		  Poor   Bottom layer   Thickest layer 	  0.00  0.00

Table 12a. -- Construction Materials -- Continued

and soil name	Pct. of map unit	gravel	e of	Potential source of sand		
	   	   Rating class 	Value	Rating class	Value	
418: Asaayi	     40 	  Poor   Bottom layer   Thickest layer	0.00	Poor Bottom layer Thickest layer	0.00	
Osoridge	   35     	  Poor   Bottom layer   Thickest layer 	0.00	Poor Bottom layer Thickest layer	  0.00  0.00	
419: Fortwingate	   35 	  Poor   Bottom layer   Thickest layer	0.00	Poor Bottom layer Thickest layer	0.00	
Cinnadale	   30   	  Poor   Bottom layer   Thickest layer	0.00	_	0.00	
Rock outcrop	20	  Not rated		  Not rated		
420: Seco	     85   	  Poor   Bottom layer   Thickest layer	0.00	Poor Bottom layer Thickest layer	0.00	
425: Montillo	     50 	  Poor   Bottom layer   Thickest layer	0.00	Poor Bottom layer Thickest layer	0.00	
Canoneros	   35   	  Poor   Bottom layer   Thickest layer	0.00	_	  0.00  0.00	
430: Montillo	   80     	  Poor   Bottom layer   Thickest layer	0.00	Poor   Bottom layer   Thickest layer	0.00	
435: Tsoodzil	   50 	  Fair   Thickest layer   Bottom layer	0.00		0.00	
Amcec	   40   	  Fair   Thickest layer   Bottom layer 	  0.40  0.43	_	  0.09  0.43	
440: Chivato	90   90 	  Poor   Bottom layer   Thickest layer	0.00	-	0.00	

Table 12a.--Construction Materials--Continued

and soil name	  Pct.   of  map  unit	gravel	e of	Potential source of sand		
	   	   Rating class	Value	   Rating class 	Value	
525: Silcat	     85 	 		  Poor   Bottom layer   Thickest layer	0.00	
550: Bryway	     50 	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00	
Galzuni	   35   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	0.01	
555: Parkelei	   45   	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	0.03	
Evpark	   35     	  Poor   Bottom layer   Thickest layer	0.00	  Poor   Bottom layer   Thickest layer	0.00	
560: Flugle	   45 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	  0.03  0.08	
Teczuni	   35     	  Poor   Bottom layer   Thickest layer 	0.00	  Poor   Bottom layer   Thickest layer	  0.00  0.00	
561: Flugle	   50 	  Poor   Bottom layer   Thickest layer	0.00	  Fair   Thickest layer   Bottom layer	0.03	
Plumasano	   40   	  Poor   Bottom layer   Thickest layer 	0.00	·	  0.04  0.09	
565: Plumasano	   65   		1	  Fair   Bottom layer   Thickest layer	0.08	
Rock outcrop	20	  Not rated 	   	  Not rated 		
566: Bamac	90	  Fair   Bottom layer   Thickest layer 	0.38	  Fair   Bottom layer   Thickest layer	0.43	

Table 12a. -- Construction Materials -- Continued

Map symbol and soil name	Pct.   of  map  unit	gravel	e of	Potential source of sand			
	 -	Rating class	Value	Rating class	Value		
575:		  -		 			
Ramah	45     	Poor   Bottom layer   Thickest layer	0.00	Fair   Thickest layer   Bottom layer	0.00		
Pescado	35	  Poor   Bottom layer   Thickest layer 	0.00		0.00		

Table 12b.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct.   of  map  unit	reclamation material		Potential source roadfill	Potential source of roadfill		e of
	     	Rating class and   limiting features		Rating class and   limiting features			Value
8: Water	100	    Not rated		    Not rated	   	    Not rated	
10: Tsosie	   35     	Sodium content	    0.00  0.12    0.90	  Good     	         	  Poor   Sodium content   	0.00
Councelor	30	  Fair   Low content of   organic matter	0.32	  Good 	     	  Good   	
Blancot	20	  Fair   Low content of   organic matter   Droughty	  0.32    0.86	  Good     	       	  Good     	       
11: Doakum	60	  Fair   Low content of   organic matter	    0.08	  Good 	     	    Good   	
Betonnie	   25     	!	  0.00  0.01  0.50	  Good     	         	  Fair   Too sandy   	0.01
12: Calladito	   55     	Too sandy Wind erosion Low content of organic matter	0.00	  Good     	         	  Poor   Too sandy   	0.00
Elias	30   30	Droughty 	0.99      0.00  0.00  0.24	  Poor   Low strength   	      0.00     	  Poor   Sodium content   Salinity 	0.00

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation material		Potential source roadfill	of	Potential source of topsoil		
	     	Rating class and   limiting features	1				Value	
13:						 		
Councelor	-   60         	Poor   Too sandy   Low content of   organic matter   No water erosion   limitation	0.00  0.32 	  Good           		Poor   Too sandy         	  0.00     	
Calladito	  -  30         	Wind erosion   Too sandy   Low content of   organic matter	  0.00  0.00  0.50    0.96	  Good         	           	  Poor   Too sandy     	  0.00       	
14: Councelor	  -  30   	'	    0.32	  Good 	     	  Good 		
Eslendo	 -  30         	Droughty Depth to bedrock Low content of organic matter	0.00  0.00  0.32    0.98	Low strength	  0.00  0.00  0.87   	Poor   Depth to bedrock   Slope   Too clayey   Rock fragments	  0.00  0.04  0.61    0.97	
Calladito	  -  25       	Wind erosion   Too sandy	  0.00  0.00  0.50    0.93	  Good         		Poor   Too sandy     	  0.00       	
16: Starlake	  -  85         	Too clayey	1	  Poor   Low strength   Shrink-swell 	0.00	   Poor   Too clayey   Sodium content   Salinity 	  0.00  0.00  0.50	
22: Querencia	  -  50     	  Fair   Low content of   organic matter   Too clayey	0.88	  Poor   Low strength     Shrink-swell	    0.00    0.94	  Fair   Too clayey   	    0.66   	

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation material		Potential source roadfill	of	   Potential source of   topsoil 	
		Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
22: Lavodnas	     35         	Depth to bedrock	0.00  0.00  0.82	  Poor   Depth to bedrock   Shrink-swell 	!	   Poor   Depth to bedrock     	      0.00       
30: Orlie	   45     	  Fair   Low content of   organic matter   No water erosion   limitation	0.68	  Fair   Shrink-swell     	    0.87   	  Good       	         
Tinian	   40         	Droughty	  0.00  0.10  0.37  0.72  0.88	Low strength	!	  Poor   Too clayey   Depth to bedrock   	  0.00  0.10 
40: Nuffel	   90     	Low content of organic matter	!	  Fair   Low strength 	      0.78   	  Good   	       
42: Suwanee	   90       		    0.68    0.88  0.90		      0.00    0.98	  Fair   Too clayey   	      0.60     
44: Suwanee	90	  Fair   Too clayey   Low content of   organic matter	0.50	  Fair   Shrink-swell 	      0.92   	  Fair   Too clayey   	      0.34   
45: Nutreeah	   90       		!	•	    0.00  0.31 	  Poor   Too clayey   	    0.00   

Table 12b. -- Construction Materials -- Continued

Map symbol and soil name	Pct.   of  map  unit	reclamation material		Potential source roadfill	of	Potential source of topsoil	
		Rating class and   limiting features		Rating class and   limiting features			Value 
47:							
Conchovar	-  90     	Poor   Too clayey   Low content of   organic matter	  0.00  0.68 	!	  0.00  0.12 	Poor   Too clayey   Salinity 	  0.00  0.50
49: Concho	  -   85     	  Fair   Too clayey   Low content of   organic matter	      0.50  0.88	!	    0.00  0.75	  Fair   Too clayey 	
51: Kwakina	   -  90     	Poor   Too sandy   Wind erosion   Low content of   organic matter	0.00	  Good     	         	  Poor   Too sandy   Salinity	0.00
52: Zuniven	  -   90 	  Poor   Wind erosion   Water erosion	0.00	  Poor   Low strength	0.00	  Good 	
53: Hawaikuh	   -  80   	  Poor   Too clayey   Low content of   organic matter	    0.00  0.68	!	    0.00  0.35	  Poor   Too clayey   	    0.00 
54: Venadito	   -  90     	  Poor   Too clayey   Sodium content   Low content of   organic matter	    0.00  0.60  0.88	Shrink-swell	    0.00  0.12 	!	    0.00  0.60
55: Sparham	   -  95     	  Poor   Too clayey   Low content of   organic matter	      0.00  0.88		      0.00  0.22	  Poor   Too clayey   	
60: Redpen	   -  90     	  Fair   Low content of   organic matter   Too clayey	      0.88    0.98	  Fair   Shrink-swell   	      0.87   	  Fair   Too clayey   	    0.70   

Table 12b.--Construction Materials--Continued

	Pct. of map unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil	
	     		1	Rating class and   limiting features	1		Value
100: Norkiki	   45       	Droughty	0.00  0.15  0.24	Shrink-swell   	1	  Fair   Depth to bedrock   	    0.35     
Kimnoli	   40     	Poor   Droughty   Depth to bedrock   Low content of   organic matter	0.00	  Poor   Depth to bedrock     	!	  Poor   Depth to bedrock   	    0.00   
110: Benally	   60     	Sodium content	0.00	į	    0.87   	  Poor   Sodium content   	    0.00   
Fruitland	   25       	Poor   Wind erosion   Too alkaline   Low content of   organic matter   Too sandy	  0.00  0.00  0.12    0.78	į	           	  Fair   Too sandy   	  0.78     
111: Yelives	   85       	!	0.18	  Good       	         	  Good   	         
115: Razito	   45         	Poor   Wind erosion   Too sandy   Low content of organic matter   Droughty	    0.00  0.02  0.18    0.58	    Good       	           	  Fair   Too sandy   	    0.02     
Shiprock	   40     	  Poor   Too alkaline   Low content of   organic matter	  0.00  0.05 	  Good     	       	  Good     	

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct.   of  map  unit	reclamation mater		Potential source roadfill	Potential source of roadfill		Potential source of topsoil	
	     	Rating class and   limiting features	Value     	Rating class and   limiting features			Value     	
116: Fajada	30	Poor		Poor		    -		
ғајаса	- 30	Poor   Droughty   Sodium content   Too alkaline   Low content of   organic matter   Depth to bedrock   Salinity   Too clayey	0.00  0.00  0.00  0.18   0.35  0.88  0.98	Poor   Depth to bedrock   Low strength   Shrink-swell 	  0.00  0.00  0.87     	Poor   Hard to reclaim   Sodium content   Salinity   Depth to bedrock   Too clayey	0.00	
Huerfano	-  30               	Poor   Droughty   Depth to bedrock   Sodium content   Too alkaline   Low content of organic matter   Salinity   Too clayey	  0.00  0.00  0.00  0.00  0.32    0.88  0.98	Poor   Depth to bedrock   Low strength   Shrink-swell	  0.00  0.00  0.87     	Poor   Sodium content   Depth to bedrock   Salinity   Too clayey 	  0.00  0.00  0.00  0.61   	
Benally	  -  25       	Poor   Sodium content   Too alkaline   Droughty   Low content of   organic matter	  0.00  0.00  0.11  0.24	  Fair   Depth to bedrock   Shrink-swell 	  0.16  0.87   	Poor   Sodium content   Salinity   	0.00	
118: Farb	  -   35     	  Poor   Droughty   Depth to bedrock   Low content of   organic matter	    0.00  0.00  0.32	  Poor   Depth to bedrock   	      0.00   	  Poor   Depth to bedrock   	      0.00   	
Chipeta	  -  30               	Poor   Droughty   Depth to bedrock   Too clayey   Low content of organic matter   Sodium content   Salinity   Water erosion	  0.00  0.00  0.00  0.12    0.22  0.50  0.90	!	  0.00  0.00  0.87     	Poor   Salinity     Salinity     Depth to bedrock     Too clayey     Sodium content     Slope	  0.00  0.00  0.00  0.22    0.37	
Rock outcrop	 -  25 	  Not rated 	   	  Not rated 	   	  Not rated 	   	
120: Doak	 -  55   	  Fair   Low content of   organic matter	  0.32 	  Fair     	       	  Good   		

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation material		Potential source of roadfill		Potential source of topsoil	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
120: Shiprock	     30       	Wind erosion   Too alkaline	    0.00  0.00  0.05	    Good     	 	    Good     	           
121: Badland	     90	    Not rated 		    Not rated 		    Not rated 	 
122: Farb	   45       	Droughty Depth to bedrock		  Poor   Depth to bedrock   		  Poor   Depth to bedrock   	    0.00   
Rock outcrop	45	  Not rated	   	  Not rated	 	  Not rated	
125: Sanfeco	   75     	Too clayey			0.82	  Poor   Too clayey 	0.00
130: Chipeta	   40       	Droughty	0.00  0.00 	  Poor   Depth to bedrock   Slope 		•	0.00
Badlands	30	  Not rated		  Not rated		  Not rated	
Moncisco	   15         	Droughty Low content of organic matter	0.00  0.08 	Cobble content	  0.32  0.75    0.98	Slope	  0.00  0.00    0.50
150: Riverwash	   65         	Too sandy	    0.00  0.00  0.01 	  Good         	           	   Poor   Too sandy   	    0.00     

Table 12b.--Construction Materials--Continued

and soil name	Pct. of map unit	reclamation material		Potential source roadfill	of	Potential source of topsoil	
	     	Rating class and limiting features	Value	Rating class and   limiting features	1	Rating class and limiting features	Value
150:		 		 		 	
Escawetter	25         	Poor Too sandy Wind erosion Low content of organic matter Droughty	  0.00  0.00  0.50    0.55	Good             		Poor   Too sandy     	0.00
160:			İ				
Escawetter	-   40       	Poor   Too sandy   Wind erosion   Droughty   Low content of   organic matter	  0.00  0.00  0.40  0.50	Good         		Poor   Too sandy     	  0.00     
Riverwash	 -  35     	Too sandy Droughty Low content of	  0.00  0.00  0.01	  Good   		  Poor   Too sandy   	  0.00 
Razito	  -  15       	organic matter Poor Too sandy Wind erosion Low content of organic matter Droughty	  0.00  0.00  0.00    0.36	  Good         	         	  Poor   Too sandy     	  0.00     
205:		 		 		 	
Penistaja	-   45 	Fair   Low content of   organic matter	0.88	Good 	   	Good   	   
Tintero	 -  40 	  Fair   Low content of   organic matter	    0.88	  Good   	     	  Good   	     
208: Marianolake	  -   85     	:	    0.00    0.99	  Fair   Shrink-swell     	      0.99   	  Good     	
210: Marianolake	   -  50 	  Fair   Low content of	      0.88	  Poor   Low strength		    Fair   Too clayey	      0.70
		organic matter Too clayey	0.98	   Shrink-swell	0.97	 	

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil	
	     		Value				Value
210:	İ		Ì				
Skyvillage	30	Poor   Droughty   Depth to bedrock   Low content of   organic matter	0.00	   Poor   Depth to bedrock   Shrink-swell 	!	   Poor   Depth to bedrock   Rock fragments 	0.00
212:	 	 		 		 	
Rehobeth	90           	Poor   Too clayey   Low content of   organic matter   Sodium content   No water erosion   limitation	0.00  0.24    0.40	!	  0.00  0.12     	!	0.00
215:	 	 		 		 	
Viuda	35     	Poor   Droughty   Low content of   organic matter	0.00	Low strength	0.00	Too clayey	0.00
		Depth to bedrock Too clayey	0.00	Shrink-swell 	0.30	Rock fragments	0.88
Penistaja	30	  Fair   Low content of   organic matter	    0.88	  Fair   Shrink-swell	    0.94 	  Good 	     
Rock outcrop	25	  Not rated		  Not rated		  Not rated	
220:	 	 		 		 	
Hagerwest	50       	Fair Low content of organic matter Droughty Depth to bedrock	  0.50    0.70  0.90	Poor Depth to bedrock	!	Fair Depth to bedrock	0.90
Bond	35       	Poor   Droughty   Depth to bedrock   Low content of organic matter	  0.00  0.00  0.82	  Poor   Depth to bedrock   	!	   Poor   Depth to bedrock   Rock fragments 	  0.00  0.95 
225:							
Aquima	40   	Fair Low content of organic matter	0.50	Fair   Shrink-swell 	0.89	Fair   Hard to reclaim 	0.95
	   	Water erosion   Sodium content 	0.90  0.97	  -  -	   	Sodium content   	0.98

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil	
	   	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
225:		 		 		 	
Hawaikuh	40	Fair   Too clayey   Low content of   organic matter   Water erosion	  0.50  0.68    0.90		  0.00  0.98 	  Fair   Too clayey   	0.34
230:		 		 		 	
Sparank	40	Poor Too clayey Low content of organic matter No water erosion limitation	0.00		  0.00  0.12   	Poor   Too clayey     	  0.00     
San Mateo	35	Fair   Sodium content   Low content of   organic matter	  0.60  0.88	!	0.00	  Fair   Sodium content   	0.60
Zia	   20 	  Fair   Low content of   organic matter	    0.88 	  Good 	     	  Good   	     
235: Notal	     45       	Poor   Sodium content   Too alkaline   Too clayey   Salinity   No water erosion   limitation	0.00  0.00  0.50  0.97	  Fair   Shrink-swell     	    0.89       	  Poor   Sodium content   Salinity   Too clayey 	    0.00  0.00  0.41 
Hamburn	40	  Fair   Low content of   organic matter	    0.08 	  Fair   Shrink-swell	    0.86	  Good   	
240:		 				 	
Breadsprings	35	Fair   Low content of   organic matter   Water erosion	  0.08    0.90	Good     		Good     	
Nahodish	   35       	Poor   Too clayey   Low content of   organic matter   Water erosion   Sodium content	  0.00  0.08    0.90  0.97	  Fair   Low strength   Shrink-swell   	  0.22  0.97   	   Poor   Too clayey   Sodium content   	  0.00  0.98   

Table 12b.--Construction Materials--Continued

and soil name	  Pct.   of  map  unit	reclamation material		Potential source   roadfill 	of	Potential source of topsoil	
	     	Rating class and   limiting features		Rating class and   limiting features		Rating class and   limiting features	Value
241: Mentmore	   85     	  Fair   Low content of   organic matter   No water erosion   limitation	0.12	į	    0.00    0.78	    Good     	
242: Gish	   45     	Too clayey	0.00		      0.00  0.09	  Poor   Too clayey   	      0.00   
Mentmore	35	Low content of organic matter	0.12	į	  0.00    0.78	  Fair   Too clayey   	0.53
244: Buckle	   85       		0.00	į	    0.00    0.64	  Good     	         
245: Buckle	   35   			  Fair   Shrink-swell	      0.98	  Good 	       
Gapmesa	30   30	Low content of organic matter Too clayey Depth to bedrock	0.50    0.50  0.65  0.98	Shrink-swell	!	İ	  0.33    0.65   
Barboncito	   25         	Droughty Depth to bedrock Low content of organic matter	0.00	Low strength Shrink-swell	!		  0.00  0.46   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation mater		Potential source roadfill	of	Potential source   topsoil 	of
	     		Value   	Rating class and   limiting features			Value   
250: Hospah	   35           	!	   0.00  0.00  0.00  0.00  0.40  0.88	Poor   Depth to bedrock   Low strength   Shrink-swell   Slope	!	Depth to bedrock Slope	    0.00  0.00  0.00  0.40  0.95
Skyvillage	   30       	Droughty Depth to bedrock	  0.00  0.00  0.32	   Poor   Depth to bedrock   		   Poor   Depth to bedrock   Rock fragments 	  0.00  0.88 
Rock outcrop	25	  Not rated 	   	  Not rated 	   	  Not rated 	
255: Farview	   50       	Poor Wind erosion Droughty Depth to bedrock Low content of organic matter	  0.00  0.00  0.00  0.50	  Poor   Depth to bedrock   	    0.00     	   Poor   Depth to bedrock     	    0.00     
Rock outcrop	   35 	  Not rated 	   	  Not rated 	   	  Not rated 	   
258: Eagleye	   40       	Too clayey Droughty Depth to bedrock	  0.00  0.00  0.00  0.50	  Poor   Depth to bedrock   Slope 		Poor   Too clayey   Depth to bedrock   Slope	  0.00  0.00  0.00
Atchee	   35         	Poor   Droughty   Depth to bedrock   Low content of   organic matter   Cobble content	1				  0.00  0.00   
Rock outcrop	20	  Not rated 		  Not rated 		  Not rated 	
260: Quarries and Pits	   95 	  Not rated 	   	  Not rated 	   	  Not rated 	   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation mater:		Potential source roadfill	of	Potential source   topsoil 	of
	     	Rating class and   limiting features	Value   	Rating class and limiting features	:	Rating class and   limiting features	Value     
261: Coal Mine Lands	    100	    Not rated	     	    Not rated	 	    Not rated	     
265: Uranium Mined Lands-	     95 	    Not rated 	     	    Not rated 	   	    Not rated 	   
270: Alesna	   70       	organic matter	  0.46  0.50    0.50	Slope	0.00  0.00      0.12	Too clayey	  0.00  0.33    0.46
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
275: Eldado	   85       	Carbonate content   Droughty	  0.09  0.16  0.18  0.50	  Good       	           	!	0.00
280: Azabache	   85         	Too alkaline Low content of organic matter Droughty	  0.00  0.00  0.24    0.57  0.88	  Good         	             	Sodium content   Salinity 	    0.00  0.00  0.00    0.68
290: Rock outcrop	45	    Not rated	   	    Not rated	   	    Not rated	   
Westmion	30	Too clayey Droughty Depth to bedrock	0.00			Too clayey	  0.00  0.00  0.00  0.50
Skyvillage	   15         	Depth to bedrock	  0.00  0.00  0.32 	  Poor   Depth to bedrock     	    0.00       	  Poor   Depth to bedrock   Rock fragments   	    0.00  0.88   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation mater		Potential source of roadfill		Potential source of topsoil	
	     	Rating class and   limiting features	1	Rating class and   limiting features		Rating class and   limiting features	Value
291: Rock outcrop	    -  50	    Not rated	 	    Not rated	     	      Not rated	   
Eagleye	  -  25           	Droughty Depth to bedrock Low content of organic matter	0.00    0.50	Low strength		Depth to bedrock   Rock fragments	  0.00  0.00  0.12    0.25
Atchee	  -  15       	Droughty Depth to bedrock Low content of organic matter	0.00	  Poor   Depth to bedrock   		Poor   Rock fragments   Depth to bedrock   Slope	0.00
300: Regracic	  -   80   		0.00	-	0.00	!	0.00
305: Celavar	  -  50       	Low content of organic matter Depth to bedrock	0.67	  Poor   Depth to bedrock     		  Fair   Depth to bedrock       	    0.65     
Atarque	 -  35       	Droughty Depth to bedrock	  0.00  0.00  0.82	  Poor   Depth to bedrock   		  Poor   Depth to bedrock   	    0.00     
308: Fikel	 -  50   	!	0.00	  Fair   Shrink-swell 	    0.38 	  Poor   Too clayey 	0.00
Venzuni	  -  40     			  Poor   Low strength   Shrink-swell 	  0.00  0.08 	  Poor   Too clayey     	    0.00   
310: Parkelei	  -  80   		      0.88 	  Fair   Shrink-swell 	      0.87 	    Good   	       

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct.   Potential source of of   reclamation materia   map     unit			Potential source roadfill	of	Potential source topsoil	of
	     		1	Rating class and   limiting features		Rating class and   limiting features	Value   
312: Bluewater	90	  Fair   Carbonate content   Too clayey   No water erosion   limitation	0.88		      0.00  0.76		      0.83  0.97
315: Flugle	   50         	organic matter	      0.88    0.98  0.99	 	           	  Fair   Too clayey     	      0.70       
Fragua	40	!	  0.00  0.88	  Good   		  Good   	       
316: Royosa	   80       	Wind erosion	    0.00  0.00  0.88	  Good       	           	  Poor   Too sandy   	    0.00     
317: Highdye	   35       	Droughty Depth to bedrock	  0.00  0.00  0.00  0.88	Low strength	1	Depth to bedrock Slope	  0.00  0.00  0.63  0.95
Evpark	30         		0.22		  0.00  0.87   	  Fair   Depth to bedrock     	    0.10       
Bryway	   20         	Droughty Depth to bedrock	  0.00  0.03  0.05  0.88	Low strength	  0.00  0.00  0.12 	  Poor   Too clayey   Depth to bedrock   	  0.00  0.05   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil	
	    -	Rating class and   limiting features	Value	Rating class and   limiting features	Value   	Rating class and   limiting features	Value
320:						   	
Parkelei	-  45   	Fair   Low content of   organic matter	  0.50 	Fair   Shrink-swell 	  0.94 	Good   	
Fraguni	  -  40     	Poor   Too sandy   Wind erosion   Low content of   organic matter	  0.00  0.00  0.12	  Good     	         	  Poor   Hard to reclaim   Too sandy 	  0.00  0.00 
325: Venzuni	   -  90   	  Poor   Too clayey   Low content of   organic matter	    0.00  0.88	  Poor   Low strength   Shrink-swell	      0.00  0.12	  Poor   Too clayey   	
332:		 		 		 	
Evpark	-  50     	Fair   Low content of   organic matter   Depth to bedrock   Too clayey	  0.68    0.93  0.98	Poor   Depth to bedrock     Low strength   Shrink-swell		Fair   Too clayey     Depth to bedrock	0.67
			į		į		
Arabrab	-  40       	Poor   Depth to bedrock   Low content of   organic matter   Droughty		Poor   Depth to bedrock   Low strength   Shrink-swell	!	Poor   Depth to bedrock   Rock fragments     Too clayey	  0.00  0.18    0.46
		Too clayey	0.92				
335: Venadito	  -   85	    Poor   Too clayey	0.00	    Poor   Low strength	0.00	    Poor   Too clayey	0.00
		Sodium content Low content of organic matter	0.60  0.68 	Shrink-swell   	0.12	Sodium content   	0.60
336:		 		 	 		
Nuffel	-  45       	Fair   Low content of   organic matter   Water erosion   Too clayey	  0.88    0.90  0.95	Poor   Low strength     Shrink-swell	  0.00    0.96	Fair   Too clayey   	  0.69   
Venadito	  -  35       	Poor   Too clayey   Sodium content   Low content of   organic matter	  0.00  0.60  0.88	  Poor   Low strength   Shrink-swell 	  0.00  0.00   	  Poor   Too clayey   Sodium content   	  0.00  0.60 

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation mater		Potential source roadfill	of	   Potential source   topsoil 	of
	     	Rating class and   limiting features	Value	Rating class and   limiting features	Value	Rating class and   limiting features	Value
338:	 	 	j I	 	j I	 	İ İ
Zyme	50         	Poor   Too clayey   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.00  0.12	Poor   Depth to bedrock   Low strength   Shrink-swell   Slope	1		  0.00  0.00  0.00  0.88
Lockerby	40             	Poor   Too clayey   Low content of   organic matter   Depth to bedrock   Droughty   No water erosion   limitation	0.23	Poor   Depth to bedrock   Low strength     Shrink-swell	!	Poor   Too clayey   Depth to bedrock     Slope 	  0.00  0.21    0.84 
345: Rock outcrop	     40	    Not rated	   	    Not rated	   	    Not rated	   
Tuces	į	Poor   Too clayey   Droughty   Depth to bedrock   Low content of organic matter	  0.00  0.07  0.10  0.12	  Poor   Depth to bedrock		Poor	  0.00  0.00  0.10
350: Toldohn	   35         	Poor   Too clayey   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.00  0.88	Poor   Depth to bedrock   Low strength   Shrink-swell   Slope	!	  Poor   Too clayey   Depth to bedrock   Slope 	  0.00  0.00  0.00
Vessilla	   30     	Poor   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.88	Poor   Depth to bedrock	    0.00   	Poor   Depth to bedrock   Rock fragments 	  0.00  0.95 
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   
351: Rock outcrop	60	  Not rated	 	  Not rated	 	  Not rated	
Vessilla	30	Poor   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.88	Poor   Depth to bedrock	0.00	  Poor   Depth to bedrock   Rock fragments 	  0.00  0.95 
352: Zia	   80   	  -  Fair   Low content of   organic matter	      0.88   	  Good   	         	    Good   	

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct.   Potential source o   of   reclamation materia   map     unit					Potential source of topsoil	
		Rating class and   limiting features	Value 	Rating class and   limiting features		Rating class and   limiting features	Value
353: Mido	     90   	  Poor   Too sandy   Wind erosion   Low content of	    0.00  0.00  0.32	    Good   	         	  Poor   Too sandy 	0.00
354: Knifehill	       80	organic matter	     	      Poor		      Poor	     
		Too clayey No water erosion limitation	0.00	Low strength	0.00	!	0.00
355:		 				 	
Rizno	35	Poor Droughty Depth to bedrock Low content of organic matter	0.00	Poor   Depth to bedrock   	!	Poor   Depth to bedrock   Slope   Rock fragments	  0.00  0.84  0.97
Tekapo	30   30	Poor   Poor   Droughty   Depth to bedrock   Too clayey   Low content of   organic matter	0.00	  Poor   Depth to bedrock   Slope 	1	  Poor   Depth to bedrock   Too clayey   Slope 	0.00
Rock outcrop	20	  Not rated 	   	  Not rated	   	  Not rated 	
357: Heshotauthla	   85         	Poor	  0.00  0.00  0.00  0.68    0.88	Shrink-swell	    0.00  0.12     	!	0.00
360:						 	
Hosta	45         	Fair Too clayey Low content of organic matter No water erosion limitation	  0.50  0.88    0.99	Poor   Low strength   Shrink-swell 	0.00	Fair   Too clayey     	0.36
Concho	40	  Poor   Too clayey   Low content of   organic matter	0.00	  Poor   Low strength   Shrink-swell	  0.00  0.12	  Poor   Too clayey   	0.00

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct.   of  map  unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil	
		Rating class and   limiting features		Rating class and   limiting features			Value   
361: Monpark	    -  80       	Too clayey Depth to bedrock Droughty	0.00	Low strength Shrink-swell			    0.00  0.29   
365: Vessilla	  -  55       	Droughty Depth to bedrock	0.00	  Poor   Depth to bedrock     		  Poor   Depth to bedrock     	    0.00     
Rock outcrop	- 35	Not rated		Not rated	į	  Not rated	
366: Bosonoak	  -  95         	Low content of organic matter	0.08    0.92		    0.78       	  Fair   Too clayey   	    0.52     
367: Chunkmonk	  -  85       	Droughty   Depth to bedrock   Carbonate content	0.00	! -			0.00
368: Simitarq	  -  60       	Droughty Depth to bedrock Too clayey	0.00	İ		Too clayey	    0.00  0.00  0.88
Celavar	  -  20       	Low content of organic matter	0.50    0.55	  Poor   Depth to bedrock     		  Fair   Depth to bedrock     	    0.65     

Table 12b. -- Construction Materials -- Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation material		Potential source roadfill	of	Potential source topsoil	of
	     		1				Value   
375: Todest	     60         	!	0.16  0.17  0.18	Poor   Depth to bedrock	!		
Shadilto	   25         	Carbonate content   Depth to bedrock		  Poor   Depth to bedrock     	    0.00       	  Poor   Carbonate content   Depth to bedrock   	
376: Todest	   80         	Depth to bedrock	0.05	  Poor   Depth to bedrock   	    0.00     	Depth to bedrock	
380: Berryhill	   50       	Low content of organic matter	    0.00  0.24    0.97		    0.00  0.12 	Salinity	    0.00  0.88    0.98
Casamero	   45         	Droughty Depth to bedrock	  0.00  0.00  0.00  0.50	Low strength	  0.00  0.00  0.12 	  Poor   Too clayey   Depth to bedrock   	  0.00  0.00     
385: Mcorreon	   65         	Carbonate content   Low content of   organic matter	0.00  0.08  0.88	Slope		Slope	      0.00  0.00  0.08
Rock outcrop	20	  Not rated 	   	  Not rated 		  Not rated 	   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation material		Potential source of roadfill		Potential source of topsoil	
	     	Rating class and   limiting features	Value   	Rating class and   limiting features	1	Rating class and   limiting features	Value   
390:			 		İ		
Banquito	90           	organic matter Water erosion Depth to bedrock	0.24	Poor   Depth to bedrock     	  0.00       	Fair   Carbonate content   Depth to bedrock	:
395:		 		1		 	
Cabezon	   60         	Droughty Depth to bedrock	  0.00  0.00  0.00  0.88	Low strength	  0.00  0.00  0.86	  Poor   Too clayey   Depth to bedrock   	  0.00  0.00     
Mcorreon	30	1	  0.08  0.50  0.88	Poor   Low strength   Shrink-swell 	0.00	!	0.08
400:		 	 			 	
Shoemaker	45         	Droughty Depth to bedrock	0.00	Poor   Depth to bedrock       	!	Fair   Depth to bedrock	  0.35       
Stozumi	   35       	  Poor   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.88	  Poor   Depth to bedrock   	  0.00     	  Poor   Depth to bedrock     	  0.00     
403:	ĺ	İ	ĺ	Ì	ĺ	İ	İ
Valnor	50         	Poor   Too clayey   Depth to bedrock   Low content of   organic matter   Droughty	  0.00  0.84  0.88    0.91	Poor   Depth to bedrock   Low strength   Shrink-swell 	  0.00  0.00  0.12 	Poor   Too clayey   Depth to bedrock   	  0.00  0.84   
Techado	30           	Poor   Too clayey   Droughty   Depth to bedrock   Low content of organic matter	  0.00  0.00  0.00  0.88	  Poor   Depth to bedrock   Low strength   Shrink-swell 	  0.00  0.00  0.12 	  Poor   Too clayey   Depth to bedrock   Slope 	  0.00  0.00  0.00 

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation mater		Potential source roadfill	of	Potential source topsoil	of
	     	Rating class and   limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
404: Rock outcrop	     35	    Not rated 		    Not rated 		    Not rated 	
Techado	35         	Poor	  0.00  0.00  0.00  0.88		  0.00  0.00  0.00  0.12	!	  0.00  0.00  0.00
Stozuni	25         	Poor   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.68 	  Poor   Depth to bedrock   	  0.00     	  Poor   Depth to bedrock   Rock fragments   Slope 	  0.00  0.00  0.84 
405: Fortwingate	   50       	Poor   Too clayey   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.08  0.21  0.88	Low strength	  0.00  0.00  0.12 	  Poor   Too clayey   Depth to bedrock   	  0.00  0.21 
Owlrock	   35       	Poor   Cobble content   Droughty   Depth to bedrock   Stone content	0.00	!	!	!	  0.00  0.00 
406: Polich	   90         	  Fair   Too clayey   Water erosion   	      0.50  0.90   		    0.00  0.75    0.98	  Fair   Too clayey   Depth to   saturated zone	    0.44  0.98   
407: Cinnadale	   50     	Poor   Droughty   Depth to bedrock   Low content of organic matter	    0.00  0.00  0.50	  Poor   Depth to bedrock   	    0.00   	Poor   Rock fragments   Depth to bedrock   Slope	  0.00  0.00  0.84
Heckly	   35         	Fair   Low content of   organic matter   Too clayey   Droughty   Depth to bedrock	  0.50    0.50  0.89  0.99	Poor   Depth to bedrock   Slope   Shrink-swell	  0.00    0.00  0.77 	Poor   Rock fragments	  0.00    0.00  0.33  0.99

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil		
	     		Value				Value	
408:		[ [		 		 		
Mirabal	50	Poor Droughty	0.00	Poor   Depth to bedrock		Poor   Rock fragments	0.00	
	     	Low content of organic matter Depth to bedrock Stone content	0.50    0.54  0.71		0.50    0.69	Slope  Depth to bedrock	0.00    0.54 	
	   	Too acid	0.99	 	İ	  -	İ	
Zuni	40         	Poor Too clayey Droughty Depth to bedrock Low content of organic matter	0.00	Shrink-swell	!		  0.00  0.00  0.29	
409:		 		 		 		
Rauster	60       	Poor   Too clayey   Low content of   organic matter	  0.00  0.88 	!	  0.00  0.12    0.50	Poor   Too clayey   Slope 	  0.00  0.00 	
			į	Depth to bedrock	!			
Rock outcrop	30	  Not rated		  Not rated		  Not rated		
410: Montillo	   50       	  Poor   Too clayey   Droughty   Depth to bedrock   No water erosion   limitation	0.00  0.36  0.71	Low strength	1		    0.00  0.71  0.84	
Tsoodzil	   40   	Poor   Too clayey   Low content of	    0.00  0.88	!	  0.00  0.12	  Poor   Too clayey   Slope	0.00	
	   	organic matter   	   	   Slope 	0.50	   Hard to reclaim   Rock fragments	0.88	
411:					į			
Ligocki	45     	'	  0.00  0.50	  Fair   Shrink-swell   	  0.99 	  Poor   Too clayey   	0.00	
Robolata	   35     	  Fair   Too clayey   Low content of   organic matter	    0.50  0.88	  Fair   Shrink-swell   	    0.90   	  Poor   Hard to reclaim   Too clayey 	  0.00  0.36	
		No water erosion   limitation	0.99 	 		 		

Table 12b.--Construction Materials--Continued

Map symbol and soil name	  Pct.   of  map  unit	reclamation mater		Potential source roadfill	of	Potential source   topsoil 	of
	     			Rating class and   limiting features			Value   
412: Rock outcrop	50	      Not rated	     	    Not rated	   	      Not rated	
Rionutria	   25             	Droughty Depth to bedrock Too clayey Cobble content Low content of organic matter	0.12	Cobble content   Shrink-swell		Too clayey Depth to bedrock	  0.00  0.09  0.10  0.84 
Zaster	25             	Droughty Depth to bedrock Low content of organic matter	0.00  0.29  0.50 	Slope   Stone content		Slope   Depth to bedrock	j
413: Morclay	   85   	Too clayey	      0.00  0.50		      0.00  0.12	    Poor   Too clayey   	      0.00
414: Zumalei	   50   	Wind erosion	      0.00  0.50	    Good     	         	    Good     	       
Corzuni	   40     	Wind erosion	    0.00  0.50 	  Good     	         	  Good     	       
415: Tsoodzil	   60     	Too clayey Low content of organic matter	  0.00  0.88    0.99	Slope	  0.00  0.00    0.12		    0.00  0.00 
Rubble Land	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct.  Of  map  unit	reclamation mater		Potential source roadfill	of	Potential source topsoil	e of
	     	Rating class and limiting features	Value	Rating class and   limiting features		Rating class and   limiting features	Value
416: Rock outcrop	     70	    Not rated	   	    Not rated	   	    Not rated 	   
Bluesky	   20         	Poor   Too sandy   Wind erosion   Droughty   Depth to bedrock   Low content of organic matter	  0.00  0.00  0.00  0.00  0.50	  Poor   Depth to bedrock       		  Poor   Too sandy   Depth to bedrock   Slope 	  0.00  0.00  0.84 
418:	 	 		 		 	
Asaayi	40         	Poor Droughty Depth to bedrock Low content of organic matter Too clayey	0.00	Poor   Depth to bedrock   Low strength   Shrink-swell			  0.00  0.57  0.97
Osoridge	   35           	Poor   Too clayey   Droughty   Depth to bedrock   Low content of   organic matter	  0.00  0.00  0.00  0.50	Poor   Depth to bedrock   Low strength   Shrink-swell			0.00
419: Fortwingate	   35         	Poor Too clayey Droughty Depth to bedrock Low content of organic matter	  0.00  0.17  0.21  0.50	Low strength		   Poor   Too clayey   Slope   Depth to bedrock 	  0.00  0.00  0.21 
Cinnadale	   30         	Droughty Depth to bedrock Stone content Low content of organic matter	0.41			  Poor   Rock fragments   Depth to bedrock   Slope 	  0.00  0.00  0.84 
Rock outcrop	20	  Not rated		  Not rated		  Not rated	
420:			į Į	 	j I	   	<u> </u> 
Seco	85       	Poor   Too clayey   Low content of   organic matter	0.00	Poor   Low strength   Shrink-swell 	  0.00  0.12 	Poor   Too clayey   	  0.00   

Table 12b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	reclamation mater		Potential source roadfill	of	Potential source of topsoil		
	     _	Rating class and   limiting features		Rating class and   limiting features	1	Rating class and limiting features	Value	
425:	İ	 			 			
Montillo	50       	Poor   Too clayey   Droughty   Low content of   organic matter   Depth to bedrock	0.00  0.13  0.88	Low strength Shrink-swell	  0.00  0.00  0.12    0.78	Poor   Too clayey   Rock fragments   Depth to bedrock	  0.00  0.00  0.90 	
Canoneros	    35     	Poor   Droughty   Depth to bedrock   Too clayey	0.00	Low strength	  0.00  0.00  0.12	Too clayey	  0.00  0.41  0.88	
430:					İ			
Montillo	80     	Poor   Too clayey   Droughty   Depth to bedrock	  0.00  0.89  0.99		  0.00  0.00  0.12	Poor   Too clayey   Depth to bedrock 	  0.00  0.99 	
435:		 				 		
Tsoodzil	50     	Poor   Too clayey   Low content of   organic matter	  0.00  0.24 	! -	  0.00  0.55 	Poor   Too clayey   Hard to reclaim 	  0.00  0.00	
Amcec	    40   	Poor   Droughty   Low content of organic matter   Stone content	      0.00  0.18    0.96	  Poor   Slope 	      0.00   	Slope    Poor   Hard to reclaim   Rock fragments     Slope	0.00    0.00  0.00    0.00	
440:		 		<u> </u>		 		
Chivato	90     	Poor   Too clayey 	  0.00 	Poor   Low strength   Shrink-swell	  0.00  0.12	Poor   Too clayey   	  0.00 	
525: Silcat	    85   	  Poor   Too clayey 	    0.00 	  Poor   Low strength   Shrink-swell	0.00	  Poor   Too clayey 	0.00	
550: Bryway	50	Poor   Too clayey   Depth to bedrock   Droughty   Low content of   organic matter   No water erosion   limitation	0.00  0.71  0.73  0.88	Low strength	   0.00   0.00   0.12 	   Poor   Too clayey   Depth to bedrock   	  0.00  0.71     	

Table 12b.--Construction Materials--Continued

and soil name		!		Potential source   roadfill 	of	Potential source	of
	     	Rating class and   limiting features		Rating class and   limiting features			Value
550: Galzuni	     35       	Too clayey	0.00  0.68 	·	      0.71       	  Poor   Too clayey   	
555:					i		
Parkelei	1	1	  0.88 	Good   	     	Good   	
Evpark		'		Poor   Depth to bedrock   Shrink-swell		  Fair   Depth to bedrock   	  0.90 
560:	į	İ	į	İ	į	İ	İ
Flugle	45   	Fair   Low content of   organic matter		Good   	   	Good     	
Teczuni	   35           	Too clayey	0.12  0.68    0.80		  0.00  0.87     	Fair   Too clayey       	  0.09         
561: Flugle		!	      0.68	    Good   	       	    Good   	     
Plumasano	   40   		    0.68	  Good   	     	  Good   	     
565: Plumasano	     65   	1		  Poor   Slope 	      0.00	    Poor   Slope 	      0.00
Rock outcrop	   20 	  Not rated 	   	  Not rated 	   	  Not rated 	

Table 12b.--Construction Materials--Continued

Map symbol	Pct.			Potential source	of	Potential source	of
and soil name	of map unit	reclamation mater:	ial	roadfill		topsoil   	
	    -	Rating class and limiting features	Value	Rating class and   limiting features	Value	Rating class and   limiting features	Value
566:		 	 	 		 	
Bamac	-  90	Poor	ļ	Poor		Poor	
	ļ	Too sandy	0.00	Slope	0.00	Too sandy	0.00
		Droughty	0.00		!	Hard to reclaim	0.00
		Low content of	0.60			Rock fragments	0.00
		organic matter	 	 		   Slope	0.00
575:		 	 	 			
Ramah	- 45	Fair	į	Fair	İ	Fair	İ
	ĺ	Too clayey	0.50	Shrink-swell	0.99	Too clayey	0.34
		Low content of organic matter	0.68 	 		 	
		Carbonate content	0.80			 	
Pescado	-  35	  Poor		Poor		  Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.00		
	 	Low content of organic matter	0.68	Shrink-swell 	0.87		ļ

Table 13.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

	L.	imitations for-	_	Features affecting				
Map symbol and soil name		Embankments,   dikes, and   levees	Aquifer-fed excavated ponds	   Drainage 	   Irrigation 	Terraces and diversions	Grassed waterways	
10:			   		   			
Tsosie	Moderate:   seepage   	Severe:   excess sodium 	Severe:   no water 	Limitation:   deep to water   	Limitation:   excess sodium   soil blowing	Limitation:   erodes easily   soil blowing 	Limitation:   erodes easily   excess sodium   too arid	
Councelor	  Severe:   seepage	  Severe:   piping	  Severe:   no water	  Limitation:   deep to water	  Limitation:   soil blowing	  Limitation:   soil blowing	  Limitation:   too arid	
Blancot	  Severe:   seepage   	  Severe:   excess sodium   piping	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   excess sodium   soil blowing   droughty	  Limitation:   too sandy   soil blowing	  Limitation:   excess sodium   too arid   droughty	
11:		 	 		 	 	 	
Doakum	Severe:   seepage 	Moderate:   piping   thin layer	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 	
Betonnie	  Severe:   seepage   	  Severe:   excess sodium   seepage   piping	  Severe:   no water   	  Limitation:   deep to water     	  Limitation:   slope   soil blowing   droughty	  Limitation:   too sandy   soil blowing 	  Limitation:   excess sodium   too arid   droughty	
12:				İ				
Calladito	Severe:   seepage 	Severe:   piping 	Severe:   no water 	Limitation:   deep to water   	Limitation:   fast intake   slope   droughty	Favorable       	Limitation:   droughty 	
Elias	  Moderate:   slope     	  Slight       	  Severe:   no water     	  Limitation:   deep to water     	  Limitation:   slope   soil blowing   droughty	  Limitation:   percs slowly   soil blowing   	  Limitation:   percs slowly   droughty 	

Table 13.--Water Management--Continued

	L:	imitations for-	_		Features a	ffecting	
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and diversions	Grassed waterways
13:		 	 				 
Councelor	- Severe:   seepage 	Severe:   piping 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   erodes easily   soil blowing	Limitation:   erodes easily   too arid
Calladito	  Severe:   seepage   	  Severe:   piping   	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   fast intake   slope   droughty	  Favorable     	  Limitation:   droughty     
14:			İ	İ			
Councelor	- Severe:   seepage 	Severe:   piping 	Severe:   no water 	Limitation:   deep to water 		Limitation:   soil blowing 	Limitation:   too arid 
Eslendo	  Severe:   slope   depth to rock	  Severe:   thin layer 	  Severe:   no water 	Limitation:   deep to water 	Limitation:   erodes easily   slope   depth to rock	slope	slope
Calladito	  Severe:   seepage 	  Severe:   piping   	  Severe:   no water   	  Limitation:   deep to water 	  Limitation:   fast intake   slope   droughty	  Favorable   	  Limitation:   droughty   
16:		 	 		 	 	 
Starlake	Slight       	Severe:   excess sodium   	Severe:   no water   	Limitation:   deep to water   	Limitation:   percs slowly   slow intake   droughty	Limitation:   percs slowly   	Limitation:   excess sodium   too arid   droughty
22:	!		!	[		!	!
Querencia	Moderate:   slope 	Moderate:   piping 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 
Lavodnas	  Severe:   seepage   slope   depth to rock	  Severe:   thin layer     	  Severe:   no water     	  Limitation:   deep to water   	  Limitation:   erodes easily   slope   depth to rock 	slope	slope

	Li	imitations for-	=	Features affecting				
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and   diversions 	Grassed waterways	
30: Orlie	  -  Moderate:   seepage   slope	  Moderate:   piping	  Severe:   no water 	  -  Limitation:   deep to water   	  Limitation:   slope   soil blowing	  Limitation:   erodes easily   soil blowing	  Limitation:   erodes easily   too arid	
Tinian	  Moderate:   slope   depth to rock	  Severe:   thin layer 	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   erodes easily   soil blowing   depth to rock	too arid	
40: Nuffel	  - Moderate:   seepage	  Severe:   piping	  Severe:   no water	  Limitation:   deep to water 	  Limitation:   erodes easily   flooding	  Limitation:   erodes easily 	  Limitation:   erodes easily   too arid	
42: Suwanee	  Moderate:   seepage	    Slight   	  Severe:   no water 	  Limitation:   deep to water 	    Limitation:   flooding 	  Limitation:   erodes easily 	    Limitation:   erodes easily   too arid	
44: Suwanee	  -  Severe:   seepage 	  Moderate:   piping   thin layer	  Severe:   no water 	  -  Limitation:   deep to water   	Limitation:   flooding   percs slowly   slow intake	    Favorable     	Limitation: percs slowly too arid	
45: Nutreeah	   - Slight 	    Severe:   hard to pack	    Severe:   slow refill	  Limitation:   deep to water	  -  Limitation:   percs slowly	  -  Limitation:   percs slowly	  -  Limitation:   percs slowly	
47: Conchovar	    - Slight     	  Moderate:   hard to pack   wetness	  Severe:   slow refill 	  -  Limitation:   percs slowly  - 	  Limitation:   excess salt   percs slowly   wetness	  Limitation:   percs slowly   wetness	    Limitation:   percs slowly   	
49: Concho	  -  Slight   	    Slight   	  Severe:   no water 	  -  Limitation:   deep to water  -	  -  Limitation:   percs slowly	    Favorable   	  -  Limitation:   percs slowly   too arid	

Table 13.--Water Management--Continued

	L	imitations for-	-	Features affecting				
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and diversions	Grassed waterways	
51:		 	 	 	 	 	 	
Kwakina	Severe:   seepage   	Severe:   piping   	Severe:   no water   	Limitation:   deep to water     	Limitation:   fast intake   soil blowing   droughty	Limitation: too sandy soil blowing	Limitation:   too arid   droughty 	
52:	İ	_	į	į				
Zuniven	- Severe:   seepage   	Moderate:   piping   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   fast intake   flooding   soil blowing	Limitation:   erodes easily   soil blowing 	Limitation:   erodes easily   too arid 	
53:		 	 	 	 	 	 	
Hawaikuh	Slight 	Moderate: hard to pack	Severe:   no water	Limitation:   deep to water	Limitation: percs slowly	Limitation:   percs slowly	Limitation:   too arid	
54:		 	 		 	 	 	
Venadito	Slight     	Severe:   hard to pack	Severe:   slow refill 	Limitation:   deep to water   	Limitation:   flooding   percs slowly   slow intake	Limitation:   percs slowly 	Limitation:   percs slowly 	
55:		 	 	 	 	 	 	
Sparham	Moderate:   seepage 	Moderate:   hard to pack 	Severe:   no water 	Limitation:   deep to water 	Limitation:   flooding   percs slowly	Limitation:   percs slowly 	Limitation:   percs slowly   too arid	
60:			İ	İ				
Redpen	Moderate:   seepage	Slight   	Severe:   no water	Limitation:   deep to water	Favorable 	Favorable 	Limitation:   too arid	
100:		 	İ		 		 	
Norkiki	Moderate:   seepage   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water   	Limitation:   fast intake   slope   soil blowing	Limitation:   soil blowing   depth to rock	Limitation:   too arid   depth to rock 	
Kimnoli	  Severe:   depth to rock     	  Severe:   thin layer     	  Severe:   no water   	  Limitation:   deep to water     	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   soil blowing   depth to rock   	  Limitation:   depth to rock     	

Table 13.--Water Management--Continued

	L:	imitations for-	_	Features affecting				
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways	
110:		 	 		 	 	 	
Benally	Moderate:   seepage   slope 	Severe:   excess sodium   	Severe:   no water 	Limitation:   deep to water 	Limitation:   excess sodium   slope   soil blowing	Limitation:   soil blowing   	Limitation:   excess sodium   too arid 	
Fruitland	Severe:   seepage	  Severe:   excess sodium   piping	  Severe:   no water   	Limitation:   deep to water 	  Limitation:   slope   soil blowing	  Limitation:   soil blowing   	  Limitation:   excess sodium   too arid 	
111:		 	 	i				
Yelives	Severe:   seepage	Severe:   piping 	Severe:   no water 	Limitation:   deep to water	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid	
115:		 			 	 	 	
Razito	Severe:   seepage 	Severe:   piping   	Severe:   no water 	Limitation:   deep to water   	Limitation:   fast intake   slope   droughty	Limitation:   too sandy   soil blowing	Limitation:   too arid   droughty 	
Shiprock	Severe:   seepage	  Severe:   excess sodium   piping	  Severe:   no water 	Limitation:   deep to water 	  Limitation:   slope   soil blowing	  Limitation:   soil blowing   	  Limitation:   excess sodium   too arid	
116:								
Fajada	Moderate:   slope   depth to rock	Severe:   excess sodium   thin layer   excess gypsum		Limitation:   deep to water 	Limitation:   excess sodium   excess gypsum   depth to rock	depth to rock	-	
Huerfano		  Severe:   excess sodium   	  Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   droughty	  Limitation:   percs slowly   depth to rock	  Limitation:   excess sodium   too arid   droughty	
Benally	Moderate:   depth to rock 	  Severe:   excess sodium   	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   excess sodium   excess salt   droughty	  Favorable     	  Limitation:   excess sodium   too arid   droughty	

Table 13.--Water Management--Continued

	L	imitations for-	_	Features affecting				
Map symbol and soil name	Pond reservoir	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways	
118:			 		 		 	
Farb	Severe:   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   too arid   depth to rock	
Chipeta	Severe:   slope   depth to rock	  Severe:   thin layer   	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   percs slowly   slope   slow intake	  Limitation:   erodes easily   slope   depth to rock	slope	
120:		İ			! 			
Doak	Severe:   seepage	Moderate:   piping   thin layer	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 	
Shiprock	Severe:   seepage	Severe:   excess sodium   piping	  Severe:   no water 	Limitation:   deep to water 	Limitation:   fast intake   slope   soil blowing	Limitation:   soil blowing 	Limitation:   excess sodium   too arid	
122:		 	 		 	 	 	
Farb	Severe:   depth to rock 	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   depth to rock   droughty	Limitation:   depth to rock 	Limitation:   too arid   depth to rock   droughty	
125:		 	 	1	 	 	 	
Sanfeco	Severe:   seepage 	Severe:   piping 	  Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   soil blowing	Limitation:   too sandy   soil blowing	Limitation:   percs slowly   too arid	
130:		İ		İ				
Chipeta	Severe:   Slope   Depth to rock	Severe:   thin layer 	Severe   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope	Limitation:   percs slowly   slope	Limitation:   slope   too arid	
Moncisco	Severe:   seepage	  Severe:   seepage	  Severe:   seepage	  Limitation:   deep to water	  Limitation:   droughty	  Limitation:   depth to rock	  Limitation:   too arid	
150:		ļ.	!	1				
Escawetter	Severe:   seepage 	Severe:   seepage 	Severe:   slow refill 	Limitation:   percs slowly 	Limitation:   flooding 	Limitation:   erodes easily 	Limitation:   erodes easily 	

	L:	imitations for-	=	Features affecting				
Map symbol and soil name	Pond reservoir   areas 	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways	
160:	[ [	 	[ [		 	 	 	
Escawetter	Severe:   seepage	Severe:   seepage	Severe:   slow refill	Limitation:   percs slowly	Limitation:   flooding	Limitation:   erodes easily	Limitation:   erodes easily	
Razito	Severe:   seepage 	  Severe:   piping   	Severe:   no water 	  Limitation:   deep to water   	  Limitation:   fast intake   slope   droughty	  Limitation:   too sandy   soil blowing	  Limitation:   too arid   droughty 	
205:	İ	İ	İ	İ	İ	j	İ	
Penistaja	Severe:   seepage 	Slight   	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 	
Tintero	Severe:   seepage 	  Severe:   piping 	Severe:   no water 	Limitation:   deep to water 	  Limitation:   slope   soil blowing	  Limitation:   soil blowing 	  Limitation:   too arid 	
208:		 		 	 	 	 	
Marianolake	Severe:   seepage 	Moderate:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 	
210:		 			 		 	
Marianolake	Severe:   seepage 	Moderate: thin layer	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing	Limitation:   too arid	
Skyvillage	  Severe:   depth to rock 	  Severe:   thin layer 	  Severe:   no water 	  Limitation:   deep to water   	  Limitation:   slope   soil blowing   depth to rock	! -	  Limitation:   too arid   depth to rock 	
212:		 			 		 	
Rehobeth	Slight       	Moderate:   hard to pack   	Severe:   no water   	Limitation:   deep to water   	Limitation:   erodes easily   flooding   percs slowly	Limitation:   erodes easily   percs slowly 	Limitation:   erodes easily   percs slowly   too arid	

Table 13.--Water Management--Continued

	L	imitations for-	_	Features affecting				
Map symbol and soil name	Pond reservoir	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and diversions	Grassed waterways	
215:		 			 	 	 	
Viuda	- Severe:   depth to rock 	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 		Limitation:   large stones   depth to rock 	Limitation:   large stones   too arid 	
Penistaja	- Severe:   seepage	  Slight     	  Severe:   no water 	Limitation:   deep to water 		  Limitation:   soil blowing   	  Limitation:   too arid 	
220:					 	 	 	
Hagerwest	- Severe:   seepage 	Moderate:   thin layer   	Severe:   no water 	Limitation:   deep to water 	!	soil blowing depth to rock	Limitation:   too arid   depth to rock	
Bond	  Severe:   depth to rock	  Severe:   thin layer   	Severe:   no water 	Limitation:   deep to water 	  Limitation:   slope   soil blowing   depth to rock		  Limitation:   too arid   depth to rock 	
225:	i							
Aquima	- Moderate:   seepage   slope	Moderate:   piping 	Severe:   no water 	Limitation:   deep to water 		Limitation:   erodes easily 	Limitation:   erodes easily   too arid	
Hawaikuh	- Severe:   seepage	  Moderate:   thin layer 	Severe:   no water 	Limitation:   deep to water 		  Limitation:   erodes easily 	Limitation:   erodes easily   too arid	
230:		 			 	 	 	
Sparank	Slight     	Moderate:   hard to pack 	Severe:   no water 	Limitation:   deep to water 		Limitation:   erodes easily   percs slowly	Limitation:   erodes easily   percs slowly   too arid	
San Mateo	 - Severe:   seepage 	  Moderate:   thin layer 	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   flooding 	  Favorable   	  Limitation:   too arid 	

	L	imitations for-	_	Features affecting				
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways	
230:	 	 	i I	j I	 	 	 	
Zia	Severe:	Severe:	Severe:	Limitation:	Limitation:	Limitation:	Limitation:	
	seepage	piping   	no water	deep to water	slope   soil blowing	soil blowing	too arid	
235:		 			 	 	 	
Notal	Slight       	Moderate:   excess salt   hard to pack   thin layer	Severe:   no water   	Limitation:   deep to water   	Limitation:   erodes easily   excess salt   percs slowly	Limitation:   erodes easily   percs slowly 	Limitation:   erodes easily   percs slowly   too arid	
Hamburn	Severe:   seepage	  Moderate:   thin layer	Severe:   no water	Limitation:   deep to water	  Limitation:   flooding	  Favorable 	  Limitation:   too arid	
240:	seepage	chin tayer	no water	deep to water	110001119	 	000 aria	
Breadsprings	Severe:	  Moderate:	Severe:	Limitation:	Limitation:	Limitation:	Limitation:	
J.	seepage	piping   thin layer	no water	deep to water	slope   soil blowing	soil blowing	too arid	
Nahodish	  Severe:   seepage   	  Moderate:   hard to pack   thin layer 	Severe:   no water 	Limitation:   deep to water 	  Limitation:   erodes easily   flooding   percs slowly	  Limitation:   erodes easily   percs slowly 	  Limitation:   erodes easily   percs slowly   too arid	
241:	İ	 			 			
Mentmore	Severe:   seepage 	Moderate:   thin layer 	Severe:   no water 	Limitation:   deep to water	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 	
242:		 	I I		 	 	 	
Gish	 	   			   	   	   	
Mentmore	Severe:	  Moderate:	Severe:	Limitation:	Limitation:	Limitation:	Limitation:	
	seepage	thin layer	no water	deep to water	slope   soil blowing	soil blowing	too arid	
244:	[							
Buckle	Severe:	Slight	Severe:	Limitation:	Limitation:	Limitation:	Limitation:	
	seepage 	 	no water	deep to water	slope   soil blowing	soil blowing 	too arid 	

Table 13.--Water Management--Continued

		imitations for-	-	Features affecting				
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed   waterways 	
245:		 			 	 	 	
Buckle	Severe:   seepage 	Moderate:   thin layer   	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing   depth to rock	Limitation:   soil blowing   depth to rock 	Limitation:   too arid   depth to rock 	
Gapmesa	Severe:   seepage	  Moderate:   thin layer   	Severe:   no water	Limitation:   deep to water 	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   soil blowing   depth to rock 	  Limitation:   too arid   depth to rock 	
Barboncito	  Severe:  :   depth to rock   	. '	Severe:     no water   	  Limitation:      deep to water     		soil blowing depth to rock	 Limitation:   too arid   depth to rock   	
250:								
Hospah	Severe:   slope   depth to rock	Severe:   thin layer   	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   depth to rock	Limitation:   large stones   slope   depth to rock	Limitation:   large stones   slope   too arid	
Skyvillage	   Severe:   depth to rock	  Severe:   thin layer   	  Severe:   no water 	Limitation:   deep to water 	  Limitation:   slope   depth to rock	  Limitation:   depth to rock   	  Limitation:   too arid   depth to rock	
255:								
Farview	Severe:   seepage   slope   depth to rock	Severe:   seepage   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   depth to rock	
258:	İ	ĺ	İ	İ	İ	ĺ	İ	
Eagleye	Severe:   slope   depth to rock 	Severe:   thin layer     	Severe:   no water   	Limitation:   deep to water   	Limitation:   percs slowly   slope   depth to rock	Limitation:   large stones   slope   depth to rock	Limitation:   large stones   slope   too arid	
Atchee	Severe:   depth to rock	Severe:   thin layer	Severe:   no water	Limitation:   deep to water	  Limitation:   slope	  Limitation:   depth to rock	  Limitation:   too arid	
270: Alesna	   Severe:   slope 	  Moderate:   thin layer     	  Severe:   no water     	  Limitation:   deep to water     		  Limitation:   slope     	  Limitation:   percs slowly   slope   too arid 	

	Limitations for				Features a	ffecting	
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and   diversions 	Grassed waterways
275:							
Eldado	Severe:   seepage	Severe:   seepage	Severe:   no water 	Limitation:   deep to water	Limitation:   slope   droughty	Limitation:   large stones   too sandy	Limitation:   large stones   droughty
280:			 		 	 	 
Azabache	Moderate:   seepage   slope	Severe:   excess sodium 	Severe:   no water 	Limitation:   deep to water	Limitation:   percs slowly   slope   droughty	Favorable   	Limitation:   excess sodium   too arid   droughty
290:		 	 		 	 	 
Westmion	Severe:   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   slope   depth to rock	too arid
Skyvillage	   Severe:   slope   depth to rock	  Severe:   piping 	  Severe:   no water 	Limitation:   deep to water 	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   slope   too arid   depth to rock
291:					 	 	 
Eagleye	Severe:   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water	Limitation:   percs slowly   slope   depth to rock	Limitation:   large stones   slope   depth to rock	Limitation:   large stones   slope   too arid
Atchee	Severe:   depth to rock	  Severe:   thin layer	  Severe:   no water	  Limitation:   deep to water	  Limitation:   slope	  Limitation:   depth to rock	  Limitation:   too arid
300: Regracic	Moderate:   seepage   slope	  Moderate:   hard to pack 	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   percs slowly   slope	  Limitation:   percs slowly 	  Limitation:   percs slowly   too arid
305:		 	 		 	 	 
Celavar	Moderate:   seepage   slope   depth to rock	Moderate:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   erodes easily   slope   depth to rock	depth to rock	!
Atarque	Severe:   depth to rock	Severe:   thin layer 	  Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing   depth to rock	Limitation:   soil blowing   depth to rock	  Limitation:   depth to rock   

Table 13.--Water Management--Continued

		imitations for-		Features affecting				
Map symbol and soil name	Pond reservoir   areas 	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	     Drainage   	   Irrigation 	Terraces and   diversions 	Grassed waterways	
308:	j 	   	 	j 	   	 	 	
Fikel	Moderate:   slope 	Slight   	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope	Favorable   	Limitation:   percs slowly 	
Venzuni	Moderate:   seepage   slope	  Severe:   hard to pack   	  Severe:   no water 	  Limitation:   deep to water   	Limitation:   percs slowly   slope   slow intake	  Limitation:   percs slowly   	  Limitation:   percs slowly   too arid 	
310:		 	 	 	 	 	 	
Parkelei	Moderate:   seepage   slope	Moderate:   piping 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 	
312:		 	 		 	 	 	
Bluewater	Slight     	Moderate:   piping   wetness	Severe:   slow refill 	Favorable     	Limitation:   erodes easily   percs slowly   wetness	Limitation:   erodes easily   wetness 	Limitation:   erodes easily   	
315:		 	 	 	 	 	 	
Flugle	Severe:   seepage 	Severe:   piping 	Severe:   no water 	Limitation:   deep to water 	Limitation:   erodes easily   slope	Limitation:   erodes easily 	Limitation:   erodes easily   too arid	
Fragua	  Severe:   seepage   	  Severe:   piping   	  Severe:   no water   	  Limitation:   deep to water     	  Limitation:   fast intake   slope   soil blowing	  Limitation:   soil blowing     	  Limitation:   too arid     	
316:	į	İ	į	į		İ	İ	
Royosa	Severe:   seepage   slope 	Severe:   seepage   piping 	Severe:   no water   	Limitation:   deep to water     	Limitation:   fast intake   slope   droughty 	Limitation:   slope   too sandy   soil blowing	Limitation:   slope   droughty 	

Drainage

Aquifer-fed

excavated

Features affecting --

Irrigation

Terraces and

diversions

Grassed

waterways

Limitations for--

dikes, and

| Pond reservoir | Embankments,

areas

Map symbol

and soil name

Table 13.--Water Management--Continued

	L	imitations for-		Features affecting				
Map symbol and soil name	Pond reservoir	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and   diversions 	Grassed waterways	
335:								
Venadito	- Slight   	Severe:   hard to pack 	Severe:   no water 	Limitation:   deep to water 	Limitation:   flooding   percs slowly   slow intake	Limitation:   percs slowly 	Limitation:   percs slowly 	
336:		 	 		 	 	 	
Nuffel	- Slight   	Slight     	Severe:   no water 	Limitation:   deep to water 	Limitation:   erodes easily   flooding   percs slowly	Limitation:   erodes easily 	Limitation:   erodes easily   too arid 	
Venadito	  - Slight     	  Severe:   hard to pack   	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   flooding   percs slowly   slow intake	  Limitation:   percs slowly   	  Limitation:   percs slowly   	
338:	İ		İ					
Zyme	- Severe:   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope	Limitation:   percs slowly   slope	Limitation:   slope   too arid	
Lockerby	!	  Severe:   hard to pack   	  Severe:   no water   	Limitation:   deep to water 	  Limitation:   percs slowly   slope   slow intake	  Limitation:   percs slowly   depth to rock 	  Limitation:   percs slowly   depth to rock 	
345:	ļ		ļ					
Tuces	Severe:   slope   	Severe:   thin layer     	Severe:   no water   	1	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   slope   depth to rock	Limitation:   slope   too arid   depth to rock	
350:	İ	ĺ	İ	İ	İ	İ	İ	
Toldohn	- Severe:   slope   depth to rock	Severe:   thin layer   	Severe:   no water   	Limitation:   deep to water   	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   slope   depth to rock	Limitation:   slope   too arid   depth to rock	
Vessilla	Severe:   seepage   slope   depth to rock	  Severe:   seepage   thin layer 	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   slope   depth to rock   	

	L:	imitations for-	_		Features a	ffecting	
Map symbol and soil name	Pond reservoir   areas 	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways
351: Vessilla	  Severe:   seepage   slope   depth to rock	  Severe:   seepage   thin layer	  Severe:   no water 	  Limitation:   deep to water   	1	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   slope   depth to rock 
352: Zia	  Severe:   seepage 	  Severe:   piping	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   slope   soil blowing	  Limitation:   soil blowing 	  Limitation:   too arid 
353: Mido	  Severe:   seepage	  Severe:   piping	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   fast intake   slope   droughty	  Limitation:   too sandy   soil blowing	  Limitation:   too arid   droughty
354: Knifehill	  Moderate:   slope 	  Moderate:   hard to pack 	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   erodes easily   percs slowly   slope	  Limitation:   erodes easily   percs slowly 	  Limitation:   erodes easily   percs slowly
355: Rizno	  Severe:   slope   depth to rock	  Severe:   thin layer 	  Severe:   no water 	  Limitation:   deep to water   	1	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   slope   too arid   depth to rock
Tekapo	  Severe:   slope   depth to rock 	  Severe:   thin layer   	  Severe:   no water   	  Limitation:   deep to water     	  Limitation:   percs slowly   slope   depth to rock	  Limitation:   slope   depth to rock   	  Limitation:   slope   too arid   depth to rock
357: Heshotauthla	  Slight       	  Severe:   excess sodium   hard to pack 	  Severe:   no water   	  Limitation:   deep to water   		Limitation:   percs slowly 	  Limitation:   excess sodium   too arid   droughty

Table 13.--Water Management--Continued

	Limitations for			Features affecting			
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and diversions	Grassed   waterways 
360:					 	 	 
Hosta	- Moderate:   seepage   slope	Moderate:   hard to pack 	Severe:   no water 	Limitation:   deep to water   	Limitation:   erodes easily   percs slowly   slope	Limitation:   erodes easily   percs slowly 	Limitation:   erodes easily   percs slowly   too arid
Concho	 - Slight   	  Moderate:   hard to pack	  Severe:   no water 	  Limitation:   deep to water 		  Limitation:   percs slowly   	  Limitation:   percs slowly   too arid
361:					 		
Monpark	- Moderate:   slope   depth to rock 	Severe:   hard to pack 	Severe:   no water   	Limitation:   deep to water 	Limitation:   percs slowly   slope   slow intake	Limitation:   percs slowly   depth to rock 	
365:					 	 	
Vessilla	- Severe:   slope   depth to rock 	Severe: piping	Severe:   no water   	Limitation:   deep to water   	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   depth to rock   
366:							İ
Bosonoak	- Severe:   seepage 	Moderate:   piping   thin layer	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 
367: Chunkmonk	  Severe:   depth to rock	   Severe:   thin layer 	  Severe:   no water 	Limitation:   deep to water 	  Limitation:   large stones   slope   depth to rock	  Limitation:   large stones   depth to rock	  Limitation:   large stones   depth to rock
368:					 	 	 
Simitarq	Severe:   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing   depth to rock	Limitation:   large stones   soil blowing   depth to rock	  Limitation:   large stones   depth to rock 
Celavar	   Moderate:   seepage   slope   depth to rock	Moderate:   thin layer 	  Severe:   no water   	Limitation:   deep to water 	  Limitation:   slope   soil blowing   depth to rock	  Limitation:   soil blowing   depth to rock 	  Limitation:   depth to rock   

		imitations for-	=	   	Features a	ffecting	
Map symbol and soil name	Pond reservoir   areas 	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation	Terraces and diversions	Grassed waterways
375:			 	i I		 	 
Todest	Moderate:   seepage   slope   depth to rock	Severe: piping	Severe:   no water 	Limitation:   deep to water   	Limitation:   slope   soil blowing   depth to rock	Limitation:   erodes easily   soil blowing   depth to rock	too arid
Shadilto	  Severe:   depth to rock   	Severe: piping	  Severe:   no water   	  Limitation:   deep to water   	Limitation: slope depth to rock droughty	  Limitation:   depth to rock   	  Limitation:   depth to rock   droughty 
376: Todest	  Moderate:   seepage   slope   depth to rock	Severe: thin layer	  Severe:   no water 	  Limitation:   deep to water 	Limitation:   slope   soil blowing   depth to rock	  Limitation:   soil blowing   depth to rock	1
380: Berryhill	  Moderate:   slope 	Moderate: hard to pack	  Severe:   no water 	  Limitation:   deep to water   	Limitation: percs slowly slope slow intake	  Limitation:   percs slowly   	  Limitation:   percs slowly   too arid
Casamero	  Severe:   depth to rock   	Severe: hard to pack	  Severe:   no water   	  Limitation:   deep to water   	Limitation:   percs slowly   slope   slow intake	  Limitation:   percs slowly   depth to rock 	
385: Mcorreon	  Severe:   slope 	Moderate: hard to pack	  Severe:   no water 	  Limitation:   deep to water   	Limitation:   percs slowly   slope	  Limitation:   percs slowly   slope	  Limitation:   percs slowly   slope   too arid
390: Banquito	  Severe:   seepage   	Moderate: thin layer	  Severe:   no water   	  Limitation:   deep to water   	soil blowing	  Limitation:   erodes easily   soil blowing   depth to rock	too arid

Table 13.--Water Management--Continued

	L	imitations for-	-	Features affecting			
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	Drainage	   Irrigation 	Terraces and diversions	Grassed waterways
395:					 		
Cabezon	Severe:   depth to rock   	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   depth to rock	Limitation:   percs slowly   depth to rock 
Mcorreon	Moderate:   slope 	  Slight   	  Severe:   no water 	Limitation:   deep to water	  Limitation:   percs slowly   slope 	  Favorable     	  Limitation:   percs slowly   too arid
400:			İ				
Shoemaker	Moderate:   seepage   slope   depth to rock	Severe:   thin layer   	Severe:   no water 	Limitation:   deep to water 	Limitation:   fast intake   slope   soil blowing	Limitation:   soil blowing   depth to rock 	
Stozuni	Severe:   depth to rock	Severe:   seepage   piping	Severe:   no water 	Limitation:   deep to water	  Limitation:   slope   soil blowing   depth to rock	Limitation:   soil blowing   depth to rock	  Limitation:   depth to rock   
403:					 	 	 
Valnor	Severe:   slope 	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   slope   depth to rock	slope
Techado	   Severe:   slope   depth to rock	  Severe:   thin layer   	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   percs slowly   slope   slow intake	  Limitation:   percs slowly   slope   depth to rock	slope
404:	j	İ	İ	İ	İ	İ	İ
Techado	Severe:   slope   depth to rock 	Severe:   hard to pack   	Severe:   no water   	Limitation:   deep to water 	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   slope   depth to rock
Stozuni	   Severe:   slope   depth to rock 	  Severe:   thin layer   	  Severe:   no water     	Limitation:   deep to water   	  Limitation:   slope   depth to rock   droughty 	  Limitation:   slope   depth to rock   	  Limitation:   slope   depth to rock   droughty 

	L:	imitations for-	_	Features affecting						
Map symbol and soil name	Pond reservoir   areas 	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and   diversions 	Grassed waterways			
405:			 	İ	 	 	 			
Fortwingate	Moderate:   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   depth to rock	Limitation:   percs slowly   depth to rock			
Owlrock	!	  Severe:   large stones   	  Severe:   no water   	Limitation:   deep to water   	  Limitation:   large stones   slope   depth to rock	  Limitation:   large stones   depth to rock 	  Limitation:   large stones   depth to rock 			
406:			İ		 					
Polich	Moderate:   seepage   	Severe:   wetness 	Severe:   slow refill 	Limitation:   flooding 	Limitation:   erodes easily   percs slowly   wetness	Limitation:   erodes easily   wetness 	Limitation:   erodes easily   wetness 			
407:	 		 		 		 			
Cinnadale	Severe:   slope   depth to rock	Severe:   seepage 	Severe:   no water 	Limitation:   deep to water 	Limitation:   large stones   slope   droughty	Limitation:   large stones   slope   depth to rock	Limitation:   large stones   slope   droughty			
Heckly	  Severe:   slope   	  Moderate:   thin layer   	  Severe:   no water     	Limitation:   deep to water   	  Limitation:   percs slowly   slope   depth to rock	  Limitation:   slope   depth to rock   	  Limitation:   percs slowly   slope   depth to rock			
408:	İ		İ	i		İ	İ			
Mirabal	Severe:   seepage   slope 	Severe:   thin layer   	Severe:   no water   	Limitation:   deep to water   	Limitation:   fast intake   slope   droughty	Limitation:   large stones   slope   depth to rock	Limitation:   large stones   slope   droughty			
Zuni	  Severe:   slope   	   Severe:   thin layer   	  Severe:   no water   	Limitation:   deep to water 	slope	Limitation:   percs slowly   slope   depth to rock	  Limitation:   percs slowly   slope   depth to rock			

Table 13.--Water Management--Continued

	L	imitations for-	-	Features affecting						
Map symbol and soil name	Pond reservoir	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways			
409:			[ 		 	 	 			
Rauster	Severe:   slope 	Moderate:   hard to pack   thin layer 	Severe:   no water 	Limitation:   deep to water   	Limitation:   percs slowly   slope 	Limitation:   percs slowly   slope 	Limitation:   percs slowly   slope 			
410:					 	 	 			
Montillo	Severe:   slope 	Severe:   hard to pack   	Severe:   no water 	Limitation:   deep to water 	slope	Limitation:   erodes easily   slope   depth to rock	slope			
Tsoodzil	Severe:   slope	  Severe:   hard to pack 	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope	  Limitation:   percs slowly   slope	Limitation:   percs slowly   slope			
411:			İ		 	 	 			
Ligocki	Moderate:   seepage   slope 	Moderate:   piping   	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   soil blowing	Limitation:   soil blowing	Limitation:   percs slowly   			
Robolata	Severe:   seepage	Moderate:   piping   thin layer 	Severe:   no water 	Limitation:   deep to water 	Limitation:   erodes easily   percs slowly   slope	  Limitation:   erodes easily   	Limitation:   erodes easily   percs slowly			
412:					 	 	 			
Rionutria	Severe:   slope 	Severe:   large stones   	Severe:   no water   	Limitation:   deep to water 	slope	Limitation:   large stones   slope   depth to rock	Limitation:   large stones   slope   depth to rock			
Zaster	Severe:   slope 	  Severe:   thin layer     	  Severe:   no water   	Limitation:   deep to water   	Limitation:   large stones   slope   droughty	  Limitation:   large stones   slope   depth to rock	  Limitation:   large stones   slope   droughty			

	Li	imitations for-	-	Features affecting						
Map symbol and soil name	Pond reservoir   areas 	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways			
413:	 	 	 		 	 	 			
Morclay	Moderate:   slope 	Severe:   hard to pack   	Severe:   no water   	Limitation:   deep to water   	Limitation:   percs slowly   slope   slow intake	Limitation:   percs slowly   	Limitation:   percs slowly   			
414:	ļ									
Zunalei	Severe:   seepage   	Severe:   piping     	Severe:   no water   	Limitation:   deep to water 	Limitation:   fast intake   slope   soil blowing	Limitation:   soil blowing   	Favorable       			
Corzuni	Severe:   seepage 	  Severe:   piping   	  Severe:   no water 	Limitation:   deep to water 	Limitation:   fast intake   slope   soil blowing	  Limitation:   soil blowing   	  Favorable     			
415:		 				 	 			
Tsoodzil	Severe:   slope 	Moderate:   hard to pack 	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope	Limitation:   percs slowly   slope	Limitation:   percs slowly   slope			
416:		 				 	 			
Bluesky	Severe:   slope   depth to rock 	Severe:   thin layer   	Severe:   no water   	Limitation:   deep to water   	Limitation:   fast intake   slope   droughty	Limitation:   slope   soil blowing   depth to rock	Limitation:   slope   depth to rock   droughty			
418:		İ				İ	İ			
Asaayi	Severe:   slope   depth to rock	Severe:   thin layer 	Severe:   no water 	Limitation:   deep to water 	-	Limitation:   slope   depth to rock	Limitation:   slope   depth to rock			
Osoridge	Severe:   slope   depth to rock 	  Severe:   thin layer     	  Severe:   no water   	  Limitation:   deep to water   	  Limitation:   percs slowly   slope   depth to rock	  Limitation:   percs slowly   slope   depth to rock	  Limitation:   percs slowly   slope   depth to rock 			

Table 13.--Water Management--Continued

	L	imitations for-	_	Features affecting						
Map symbol and soil name	Pond reservoir   areas 	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	Drainage	   Irrigation   	Terraces and diversions	Grassed waterways			
419:					 	 	 			
Fortwingate	Severe:   slope 	Severe: thin layer	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope   depth to rock	Limitation:   slope   depth to rock 	Limitation:   percs slowly   slope   depth to rock			
Cinnadale	  Severe:   slope   depth to rock 	Severe:   seepage	  Severe:   no water   	Limitation:   deep to water 	Limitation:   large stones   slope   droughty	  Limitation:   large stones   slope   depth to rock	  Limitation:   large stones   slope   droughty			
420:						 	 			
Seco	Moderate:   slope 	Severe:   hard to pack	Severe:   no water 	Limitation:   deep to water	Limitation:   percs slowly   slope	Limitation:   percs slowly 	Limitation:   percs slowly 			
425:					 	 	 			
Montillo	Moderate:   slope   depth to rock	Severe: hard to pack	Severe:   no water 	Limitation:   deep to water 	Limitation:   large stones   slope   droughty	Limitation:   large stones   percs slowly   depth to rock	Limitation:   large stones   depth to rocl   droughty			
Canoneros	  Severe:   depth to rock   	   Severe:   hard to pack 	  Severe:   no water   	Limitation:   deep to water 	  Limitation:   percs slowly   slope   depth to rock	  Limitation:   percs slowly   depth to rock 	  Limitation:   percs slowly   depth to roc! 			
430: Montillo	  Moderate:   slope   depth to rock	Severe:   hard to pack	  Severe:   no water 	  Limitation:   deep to water   	Limitation:   percs slowly   slope   depth to rock	Limitation:   percs slowly   depth to rock				
435:					 	 	 			
Tsoodzil	Severe:   slope 	Moderate: large stones	Severe:   no water 	Limitation:   deep to water 	Limitation:   percs slowly   slope	Limitation:   large stones   slope	Limitation:   large stones   percs slowly   slope			
Amcec	  Severe:   seepage   slope	  Severe:   seepage	  Severe:   no water 	  Limitation:   deep to water	  Limitation:   slope   droughty	  Limitation:   slope 	  Limitation:   slope   droughty			

	L	imitations for-	-	Features affecting						
Map symbol and soil name	Pond reservoir   areas	Embankments, dikes, and levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation   	Terraces and diversions	Grassed waterways			
440:	į I		i I		 	 	 			
Chivato	Slight     	Severe: hard to pack	Severe:   no water 	Limitation:   deep to water 	Limitation:   flooding   percs slowly   slow intake	Limitation:   percs slowly 	Limitation:   percs slowl 			
525:			 		 	 	 			
Silcat	Moderate:   slope 	Moderate: hard to pack	Severe:   no water		Limitation:   percs slowly   slope	Limitation:   percs slowly	Limitation:   percs slowl   too arid			
550:			 		 	 	 			
Bryway	Moderate:   slope   depth to rock	Severe: thin layer	Severe:   no water 	1	Limitation:   percs slowly   slope	Limitation:   erodes easily   percs slowly   depth to rock	too arid			
Galzuni	Moderate:   seepage   slope	Slight	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   erodes easily   percs slowly   slope	  Limitation:   erodes easily   	  Limitation:   erodes easi   percs slowl   too arid			
555:			 		 	 	 			
Parkelei	Severe:   seepage	Severe: piping	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid			
Evpark	Moderate:   seepage   slope   depth to rock	Moderate: piping thin layer	  Severe:   no water 	  Limitation:   deep to water 	  Limitation:   slope   soil blowing   depth to rock	soil blowing depth to rock	  Limitation:   too arid   depth to ro 			
560:					 	 	 			
Flugle	Severe:   seepage 	Moderate: piping thin layer	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing	Limitation:   soil blowing 	Limitation:   too arid 			
Teczuni	Moderate:   slope 	Moderate: hard to pack	  Severe:   no water 	!	  Limitation:   erodes easily   percs slowly   slope	erodes easily	  Limitation:   erodes easi   percs slowl   too arid			

Table 13.--Water Management--Continued

	L	imitations for-			Features a	ffecting	
Map symbol and soil name	Pond reservoir   areas	Embankments,   dikes, and   levees	Aquifer-fed   excavated   ponds	   Drainage 	   Irrigation 	Terraces and diversions	Grassed waterways
561:		 			 		
Flugle	Severe:	Severe:	Severe:	Limitation:	Limitation:	Limitation:	Limitation:
	seepage	piping 	no water	deep to water	slope   soil blowing	soil blowing	too arid
Plumasano	Severe:	  Severe:	  Severe:	  Limitation:	  Limitation:	  Limitation:	  Limitation:
	seepage	piping 	no water	deep to water	slope   soil blowing	soil blowing	too arid
565:		 			 	 	 
Plumasano	Severe:   seepage   slope	Severe:   piping   	Severe:   no water 	Limitation:   deep to water 	Limitation:   slope   soil blowing   droughty	Limitation:   slope   soil blowing	Limitation:   slope   too arid   droughty
566:		! 	ì		 	İ	İ
Bamac	Severe:   seepage   slope 	Severe:   seepage   	Severe:   no water 	Limitation:   deep to water   	Limitation:   slope   droughty 	Limitation:   large stones   slope   too sandy	Limitation:   large stones   slope   too arid
575:	İ	İ	İ	İ		İ	İ
Ramah	Moderate:   seepage	Moderate:   piping	Severe:   no water	Limitation:   deep to water	Limitation:   soil blowing	Limitation:   soil blowing	Limitation:   too arid
Pescado	   Severe:   depth to rock   	  Severe:   thin layer     	Severe:   no water 	Limitation:   deep to water 	   Limitation:   slope   soil blowing   depth to rock 	  Limitation:   soil blowing   depth to rock   	  Limitation:   depth to rock     

Table 14.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

		 	Classif	ication	Fragi	nents		_	e passir	ng		 
Map symbol	Depth	USDA texture					! :	sieve n	umber		Liquid	
and soil name	 	İ	   Unified	AASHTO	>10  inches	3-10	   4	l 10	40	200	limit	ticity index
	 			AASIIIO	Inches		<u> </u>	<u> </u>		200 	İ	
	In				Pct	Pct					Pct	
8:	 	İ	 	 		 	 	 				 
Water						 		 				
10												
10:	l l 0-2	 			l l 0		100	   100	100 100		115 05	   4 10
Tsosie	!	Fine sandy loam  Fine sandy loam		A-2, A-4  A-2, A-4	l 0	0   0	100		90-100  85-100		15-25  15-25	4-10   4-7
	!	-	!	1	l 0	l 0	100				!	4-7   5-15
	13-35	•		A-4, A-6  A-6	l 0	l 0	100				10-30  30-40	10-15
	!	Sandy clay loam		1	l 0	l 0	100				1	15-20
	35-47 47-65			A-6	l 0	l 0	100		70-85  85-100		1	!
	47-65	Loam	CL	A-6 	0	U	100	100 	82-100	65-85 	25-35	10-15 
Councelor	!	Fine sandy loam		A-2-4, A-4	0	0	100		85-100		20-30	4-7
		Fine sandy loam		A-2-4, A-4	0	0	100		85-100		20-30	7-10
	20-47	1 -	SC, SC-SM, SM		0	0	100	100			10-30	1-10
	47-65	Silt loam	CL-ML	A-4	0	0	100	100	65-85 	60–80 	20-30	5-10 
Blancot	0-3	  Fine sandy loam	  SC	  A-2-4, A-4	0	0	100	100	  85–100	  30–50	20-30	7-10
	3-11	Clay loam	CL	A-6	0	0	100	100	70-85	65-80	35-40	15-20
	11-16	Sandy clay loam	CL, SC	A-6	0	0	100	100	50-80	40-65	30-40	10-20
	16-37	Sandy loam	SC	A-4	0	0	100	100	55-86	40-50	20-30	7-10
	37-65	Loamy sand	SC-SM, SM	A-2-4	0	0	100	100	50-80	25-30	10-20	NP-7
11:	 	 	 	 	 	 	 	 	 			 
Doakum	0-2	  Fine sandy loam	İsc	A-2-4, A-4	i o	i I 0	100	100	75-95	30-50	15-25	7-10
	2-8	Sandy clay loam		A-6	0	0	100	100				10-15
	8-13	Sandy clay loam		A-6	i 0	i 0	100	100	50-70	45-65	1	10-15
	13-21	Sandy clay loam		A-6	i 0	i 0	100				1	10-15
	21-42	Sandy clay loam	CL, SC	A-6	0	0	100	100	50-70	45-65	30-35	10-15
	42-65	Sandy loam	SC-SM	A-4	0	0	100	100	65-85	40-60	15-30	4-7
Betonnie	   0-3	  Sandy loam	  SC	  A-2-4, A-4	   0	   0	100	   100	  70–90	  20-40	  15-25	   7-10
Docornico	3-11	Sandy loam		A-2-4, A-4	1 0	l 0	100				20-30	7-10
	11-21	Sandy loam		A-2-4	1 0	l 0	100				20-30	7-10
	21-29	Loamy sand	1	A-2-4	1 0	1 0	100				15-20	NP-4
	29-45	Loamy sand	1	A-2-4	i 0	l 0	100				15-20	NP-4
	45-52	Loamy sand	1	A-2-4	1 0	l 0	100				15-20	NP-4
	52-60	Sandy loam		A-2-4	0	0	100				20-30	7-10
10.												
12: Calladito	l l 0-2	  Loamy fine sand	l l cm	  A-2-4	l l 0	l l 0	100	   100	  70–90	  20–35	  10-15	   1-4
Callaulto	2-26			A-2-4	l 0	l 0	100	100			10-15	1-4   1-4
	26-65	Loamy fine sand  Loamy fine sand		A-2-4	0	0	100				10-15	1-4
Elias	0-1	Fine sandy loam	1	A-4	0	0	1	85-100			20-30	4-7
	1-3	Sandy clay loam		A-6	0		95-100				1	10-15
	3-10	Sandy clay loam		A-6	0		95-100				1	10-15
	10-18	Loamy fine sand		A-2-4, A-4	0		95-100				!	NP-4
	18-33	Sandy clay loam	:	A-6	0		95-100				!	10-15
	33-65 	Clay loam	CL	A-6, A-7-6 	0 	0 	95-100 	90-100 	80-100 	1/U-90 	35-45 	15-20 
	I	I	I .	I .	1	I	1	I	1		I	I

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classification		Fragments		Percentage passing   _  sieve number  Liq				  Liquid	   Plas-
and soil name					>10	3-10	ļ					ticity
	 		Unified	AASHTO	inches	inches	4 	10	40	200 		index 
	In			-	Pct	Pct					Pct	 
				!	ļ		ļ	ļ				
13: Councelor	   0-2	  Fine sandy loam	l ac	A-2-4, A-4	   0	l I 0	   100	   100	  85-100	  30_50		   7-10
Councelor		Fine sandy loam		A-2-4, A-4	1 0	l 0	100	100	85-100	:	20-30	7-10
		Silty clay loam		A-6	0	0	100	100	80-100	:	35-40	15-20
	19-42	Loamy fine sand	SM	A-2-4, A-4	0	0	100	100	70-90	20-40	15-20	1-4
		Loam	CL	A-6	0	0	100	100	80-100	:	30-35	7-15
	55–65 	Loam	CL	A-6	0	0 	100	100	80-100 	70-90 	30-35 	7-15 
Calladito	0-3	Loamy fine sand	SM	A-2-4	0	0	100	100	  70–90	20-35	10-15	1-4
	3-37	Loamy sand	SM	A-2-4	0	0	100	100	65-85	15-35	10-15	1-4
	37-65	Loamy fine sand	SM	A-2-4	0	0	100	100	70-90	20-35	10-15	1-4
14:					l I	 	 	 		 		 
Councelor	0-4	Fine sandy loam	SC-SM	A-2-4, A-4	j 0	0	100	100	80-100	30-50	15-20	4-7
		Fine sandy loam		A-4	0	0	100	100	80-100		15-30	4-7
	16-65 	Fine sandy loam	SC-SM	A-4	0	0	100	100	80-100	40-60 	15-30	4-7
Eslendo	0-2	Loam	  CL	  A-6	0	0	  80-100	  75–100	  65-85	  60–80	  25-35	  10-15
	2-11	Silty clay	CL	A-6	j o	0	80-100	75–100	70-90	65–85	35-40	15-20
		loam, clay										
		loam										
	11-20	Weathered   bedrock	 	1		 	 	 		 		 
		Bearock				 						
Calladito	0-3	Loamy fine sand	SM	A-2-4	0	0	100	100	70-90	20-35	10-15	1-4
	3-41	Loamy sand	SM	A-2-4	0	0	100	100	1		10-15	1-4
	41-65 	Loamy fine sand	SM 	A-2-4	0	0 	100 	100 	70-90 	20-35 	10-15	1-4 
16:				i	İ							
Starlake	0-3	Clay	CH, CL	A-7-6	0	0	90-100	85-100	70-90	60-80	45-55	20-30
			CH, CL	A-7-6	0				80-100			20-30
		1 -	CL OT	A-6, A-7-6	0   0				65-85			15-20
	20-54	! -	CH, CL  CL	A-7-6  A-6, A-7-6	1 0				65-85		45-60  35-45	15-20
	31 03											
22:		   Tri	l aa aw			   0				  45-65		
Querencia	0-2   2-9	Fine sandy loam  Clay loam	CL	A-4  A-6	0   0		95-100  95-100				20-30 30-40	4-7  10-15
		! -	CL	A-6	1 0		95-100				!	10-15
		! -	CL	A-6	0		90-100		:	:		10-15
Lavodnas	   0–3	Loam	  CL	  A-6	0	   0	105 100	  an 1nn	165 05	  55.70	  25-35	  10 15
Lavodias		1	CL	A-7-6	0	l 0				55 70 	41-45	!
		Clay	CL	A-7-6	0	0					35-55	!
	13-20	Weathered	ĺ	İ	0	0						ļ
		bedrock				 				 		 
30:	 		 									
Orlie	0-2	Fine sandy loam		A-4	0	0					20-30	
	2-5	Loam	CL	A-6	0	0	100				25-35	
		Clay loam	CL	A-6, A-7-6	0	0					35-45	
		Sandy clay loam  Silty clay loam		A-6  A-6, A-7-6	0	0   0					30-40 35-45	
		Clay loam	CL	A-6, A-7-6	1 0	l 0					35-45	
				1	-	į -						

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	nents		rcentage	-	ng	  Liquid	Dlag
and soil name	Deptii	OSDA CEXCUTE	<del></del>	 I	>10	I   3-10		steve II	miner			ticity
and soll hane			   Unified	AASHTO		inches	4	10	40	200		index
	In		 	 	   Pct	   Pct		 	 	 	   Pct	 
30:												
Tinian	0-3	Very fine sandy   loam	SC-SM 	A-4 	0 	0   	100	100 	90-100 	55-75 	20-30 	4-7 
	3-8		CL	A-6	0	0	100				35-40	
				A-7-6	0	0	100		90-100			20-30
	19-24 24-40	Clay loam  Unweathered   bedrock	CL   	A-6   	0   	0       	100	100   	90-100   	80-100   	35-40	15-20   
40:					 			 	 	 		 
Nuffel	0-2	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	80-100	75-95	20-35	5-15
		Silty clay loam		A-6	0	0	100				35-40	
		1		A-4, A-6	0	0	100		80-100			5-15
		Silty clay loam		A-6	0	0	100		!	!	35-40	!
	26-65	Silt loam	CL, CL-ML 	A-4, A-6 	0 	0   	100	100 	80-100 	/5-95 	20-35	5-15 
42:		ĺ		ĺ	ĺ			ĺ	ĺ	ĺ	ĺ	ĺ
Suwanee	0-4		CL	A-6, A-7-6	0	0	100				35-45	
			CL	A-6	0	0	100				35-40	
			CL	A-6	0	0	100		80-100		25-35	
	48-65	Clay loam	CL 	A-6 	0 	0     I	100	100 	70-85 	65-75 	35-40 	15-20 
44:		İ		İ	İ	i i		İ	İ	İ	i	İ
Suwanee	0-10	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-30
	10-17	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-30
		1 =	CL	A-6, A-7-6	0	0	100			!	1	15-20
	30-47	Sandy clay loam		A-6	0	0	100				1	10-20
	47-65	Sandy loam 	CL-ML, CL 	A-4	0 	0   	100	100 	70-90 	40-60 	20-25 	5-10 
45:				İ	İ	i i		İ	İ	İ	İ	İ
Nutreeah	0-10	Clay loam	CL	A-6, A-7-6	0	0	100	100	80-100	70-90	35-45	15-20
		1 =	CL	A-6, A-7-6	0	0	100		80-100		35-45	!
		1 =	CL	A-7-6	0	0	100		80-100	!	1	20-25
	24-40		CH, CL	A-7-6	0   0	0     0	100 100		80-100		45-65  45-65	25-45
	40-65	CIAY	CH, CL	A-7-6 	U		100	100	80-100	/3-93	45-65	25-45
47:		j		j	į	i i		į	į	į	į	į
Conchovar	0-3	Clay loam	CL	A-7-6	0	0	100	100	80-100	75-95	40-45	15-20
	3-9		CH, CL	A-7-6	0	0	100		80-100			20-40
		Clay, clay loam		A-7-6	0	0	100		80-100		1	15-35
	26-36	1 =		A-7-6	0	0	100		80-100			20-40
			CH, CL	A-7-6	0   0	0     0	100 100		80-100			20-40 20-35
	54-65	Sandy clay 	CH, CL	A-7-6 	U		100	100	80-100 	55-75	45-60	20-35
49:		İ	İ	İ	İ	i i		İ	j	j	į	j
Concho			CL	A-6, A-7-6	0	0	100				35-45	
		1 2	CL	A-6, A-7-6	0	0	100		80-100		35-45	
	28-38	-		A-7-6	0   0	0     0	100				45-60	
	38-65	Clay loam 	CL 	A-6, A-7-6 	0	0	100	100 	  80-100	/0-90	35-45 	112-20

Table 14.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments			e passir	ng		
Map symbol and soil name	Depth	USDA texture			.    >10	3-10		sieve n	umber		Liquid	Plas-  ticity
and soll name			   Unified	AASHTO	1	3-10  inches	   4	10	40	200	 	index
	   In	-	   		   Pct 	   Pct 	   	   	   	   	Pct	   
51:				į								
Kwakina		Loamy fine sand	'	A-2-4, A-4	0	0	100		75-95			1-4
		Loamy fine sand Fine sand, sand	'	A-2-4, A-4  A-2-4	0	0   0	100   100	100   100	75–95  80–100		15-20	1-4  NP-4
			CL-ML, SC-SM	!	1 0	I 0	100	100	65-85			4-7
	23 33	fine sandy   loam, silt   loam				°     			     			<del></del> /   
	33-65	Loamy fine   sand, loamy   sand	SM   	A-2-4, A-4   	0	0     	100   	100   	  75–95   	20-40	15-20	NP-4     
52:												
Zuniven		-		A-2-4	0	0	100				15-20	
	12-42   	Silty clay   loam, silt   loam	CL   	A-6   	0   	0   	100   	100   	95-100   	85-95   	25-40	10-20   
	42-65	Loamy fine sand	SM	A-2-4	0	0	100	100	90-100	15-30	15-20	1-4
53:								 		 		
Hawaikuh		-	CL	A-6, A-7-6	0						35-45	
		1	CL	A-7-6	0				!		40-50	!
		1 4	CL	A-6, A-7-6	0						35-45	
	42-65		CL CH, CL	A-6, A-7-6  A-7-6	0						35-45 45-55	
54:			 	 		 	 	 	 	 		 
Venadito	0-5	Clay	CH	A-7-6	0	0	100	100	70-85	60-80	60-75	40-55
	5-29	Clay	CH	A-7-6	0	0	100	100	70-85	60-80	65-75	45-55
	29-40	Sandy clay	CH, CL	A-7-6	0	0	100				45-60	
	40-65 	Clay	CH 	A-7-6	0 	0 	100 	100 	70-85 	60-80 	65-75 	45-55 
55:												
Sparham			CL	A-7-6	0	0	100				40-45	
		1 -	CH, CL	A-7-6	0	0	100	100			45-60	!
		Sandy clay loam	CL CL	A-6  A-7-6	0	0   0	100   100	100   100	75-95		30-40  45-60	
	18-27	Sandy clay loam		A-7-6	1 0	I 0	100				30-40	
	31-65		CH, CL	A-7-6	0	0	100				45-60	
60:			 	 		 	 	 	 			 
Redpen	0-4	Sandy clay loam	CL-ML, SC	A-4	0						25-30	
		Sandy clay loam		A-2-6, A-6	0	0	85-100	80-100	20-40	20-40	30-40	10-15
		Sandy clay loam	'	A-2-6, A-6	0						30-40	
	52–65 	Clay loam	CL 	A-6 	0 	0 	85-100 	80-100 	60-80 	55-75 	30-40	10-15 
100: Norkiki	0.2	Loams gand	   cm				105 100		    40–60	30 50	115 20	   1 4
INOT KTKT		Loamy sand  Sandy clay loam	SM LCT.	A-2-4, A-4  A-6	0   0				60-80			1-4  10-15
		•	SC-SM	A-6	1 0				55-75	•		5-7
	19-28	Sandy loam  Sandy clay loam  Unweathered   bedrock	'	A-4  A-6 	0 0				60-80 			5-7  10-15 
	İ	İ		į	İ	İ	j	j	İ	j	į	İ

Table 14.--Engineering Index Properties--Continued

	Classification		ication	Fragi	ments	Pei	centage	ng		 		
Map symbol	Depth	USDA texture			İ			sieve m	mber		Liquid	Plas-
and soil name					>10	3-10	l				limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In		<del></del>		Pct	Pct	 	 	 	 	Pct	 
		į		İ	į	į				į	į	į
100: Kimnoli	0.2	  Fine sandy loam	l cc	  A-2-4, A-4	   0	   0	   100	   100	  80-95		120.25	   7–10
KIRRIOII	2-7	· -		A-2-4, A-4	I 0	I 0	100		65–80	1		7-10   4-7
		Sandy clay loam		A-6	l 0		95-100			1		10-15
		Unweathered										
		bedrock	İ	İ	İ	İ				İ	İ	İ
110:				 	 	 			 	 		 
Benally	l 0–2	Sandv clav loam	CL-ML, SC	A-4	l I 0	l I 0	  80-100	  75–100	l 65-85	  45–65	20-30	   5–10
-		Sandy clay loam		A-6	0				'		30-40	
	9-25	Sandy clay loam	sc	A-6	0	0	85-100	80-100	70-90	40-50	30-40	10-20
	25-65	Sandy clay loam	sc	A-6	0	0	85-100	80-100	70-90	40-50	30-40	10-20
Fruitland	l l 0–3	  Loamy fine sand	  SM	  A-4	l I 0	l I 0	   100	   100	  65–85	  20-40	10-20	   1-4
	3-10	Loamy fine sand	SM	A-4	0	0	100	100	65-85	30-50	20-25	1-4
	10-19	Loamy fine sand	SM	A-2-4	0	0	100	100	65-85	20-35	10-20	1-4
	19-29	Loamy fine sand	SM	A-4	0	0	100	100	65-85	30-50	10-20	1-4
	29-65	Fine sandy	SC-SM, SM	A-2-4, A-4	0	0	100	100	70-90	30-50	15-25	NP-7
		loam, loamy										
		fine sand										
111:												
Yelives		Fine sandy loam		A-4	0				'		20-30	!
		Fine sandy loam		A-4	0	0	100		80-100			4-10
	12-30	1		A-4, A-6	0	0	100		'		20-30	
	30-41	'	CL	A-4	0	0			'		15-25	!
	41-56	!	SM	A-4	0	0	100	  90-100	65–85	25-36	15-25	1-4
	 	sand, loamy		l I	 	 			 		1	 
	l   56_80	Loamy fine sand	lom Iom	  A-4	I I 0	I I 0	   95_100	   90_100	   80_100	  25_36	15-25	   1_∕I
	30 00		SF1	  L				100				
115:												
Razito			SM	A-2-4	0	0	100		'		15-20	!
		1 -	SM	A-2-4	0	0   0	100		30-50			1-4
	34-65	Loamy sand	SM 	A-2-4 	0 	U	100 	100 	30-50 	20-40	15-20	1-4 
Shiprock	0-3	Fine sandy loam	SC-SM, SC	A-4	0	0	100	95-100	65-85	30-50	15-25	4-10
	3-15	Fine sandy loam	SC-SM, SC	A-4	0	0	100	95-100	75-95	40-60	20-30	4-10
	15-37	Fine sandy loam	SC-SM, SC	A-4	0	0	100	95-100	75-95	40-60	20-30	4-10
	37-60	Fine sandy	SC-SM, SM	A-2-4, A-4	0	0	100	95-100	70-90	30-50	15-25	NP-7
		loam, loamy fine sand	 	1	 	 		 	 	 		 
		IIIIe Said							 			
116:				[						[		
Fajada	0-2	Gravelly sandy	SC	A-2-6, A-6	0	0	65-80	60-75	45-55	30-50	25-35	10-15
		clay loam										
	2-6	1 - 1	CL	A-6, A-7-6	0	0	95-100	90-100	80-95	65-85	35-45	15-20
		sandy clay										
		Sandy clay loam		A-6	0	0			'		25-40	
		Sandy clay loam		A-6	0	0			60-75			10-20
			CL	A-6	0	0	1 132-T00	ı  a∩-T00	/U-85 	!	30-40	!
	∠8-4U 	Weathered   bedrock	] 	 	I	I			I			
	 	pentock	 	I I	I I	I I		l I	I I	 	I I	l I
	I	I	I	I	I	I	1	1	I	I	I	I

Table 14.--Engineering Index Properties--Continued

Map symbol   and soil name	Depth	USDA texture	Classif	ication	İ	ments		_	e passin umber	ng	  Liquid	
and soil name		   	   Unified	AASHTO	>10  inches	3-10  inches	   4	10	40	200	limit   	ticity  index 
	   In	   	   		   Pct 	   Pct 	   	   	   	   	Pct	   
116: Huerfano	0-2 2-17 17-20	Loam  Clay loam  Weathered   bedrock	  cr   	  A-6  A-6 	   0   0 	   0   0 	   100   100 	100   100 	!		!	  10-15  15-20 
Benally	0-2 2-18 18-45 45-55	  Sandy clay loam  Sandy clay loam  Sandy clay loam  Weathered   bedrock	SC	  A-6  A-6  A-6	   0   0   0 	0	  80-100  90-100  90-100 	85-100	60-80	40-50	30-40	  10-15  10-20  10-20 
118: Farb	0-2 2-9 9-20	  Sandy loam  Sandy loam  Unweathered   bedrock	  SC-SM  SC-SM 	  A-2-4, A-4  A-2-4, A-4 	   0   0 		  90-100  90-100 				  15-30  15-30 	   4-7   4-7 
Chipeta	0-2 2-12	  Silty clay  Silty clay   loam, silty   clay, clay	  CL   	  A-6, A-7  A-6, A-7 	   0   0 	   0   0 	   100   100 	   100   100	  95-100  95-100   	'	!	  15-25  15-25 
	12-20	Weathered   bedrock	 	i !	   	   	 		   		   	   
Rock outcrop	   0 	  Unweathered   bedrock	   	   	   	   	   	   	   	   === 	   	   
120: Doak Shiprock	0-2 2-8 8-12 12-40 40-65 0-4 4-18 18-37 37-65	Fine sandy loam  Sandy clay loam  Sandy clay loam  Sandy clay loam  Sandy loam  Loamy fine sand  Fine sandy loam  Fine sandy loam  Fine sandy loam  Fine sandy loam  Fine sandy loam  Fine loamy loamy loam, loamy	CL, SC  CL, SC  CL, SC  SC, SC-SM    SM  SC-SM				100 100	100   100   100   100   100   95-100   95-100	60-80  60-80  55-75    70-90  75-95	40-60  40-60  40-60  30-50    30-50  40-60  40-60	30-35  30-35  20-30    15-20  20-30  20-30	4-10  10-15  10-15  10-15  4-10   NP-4  4-7  4-7  NP-7
121: Badland	   0-2   2-20	fine sand	      CH 	        A-7-6   	       0   	       0   	       100   	     100   	       100   	      90-100   	      55–65   	      25-35   
122: Farb	0-2     2-5   5-20	  Very gravelly   sandy loam  Sandy loam  Unweathered   bedrock	  GC-GM, GM    SC-SM 	  A-1-a, A-1-b,   A-2-4  A-2-4, A-4 	   0   0   0 	į	  25-45    90-100   	İ	į	ĺ	  15-25    15-25 	  NP-7     4-7 

Table 14.--Engineering Index Properties--Continued

Map symbol	   Depth	   USDA texture	Classi	fication	Frag	ments		rcentage sieve n	_	ng	  Liquid	   Plas-
and soil name					>10	3-10					limit	ticity
	 		Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
122:	 		 			 	 	 	 	 	 	 
Rock outcrop	l 0	Unweathered	! 				i	 				
		bedrock		ļ			į	į				
125:			 			 		 	 	 	 	 
Sanfeco	0-2	Fine sandy loam	SC	A-4	0	0	100	100	90-100	40-50	20-30	5-10
	2-10	Clay loam	CL	A-6, A-7-6	0	0	100	100	75-95	70-90	35-45	15-20
	10-27	Clay	CL	A-7-6	0	0	100	100	80-100	80-100	40-50	20-30
	27-35	Sandy clay	CL	A-6, A-7-6	0	0	100	100	65-85	50-70	35-50	15-30
	35-39	Sandy clay loam	SC	A-6	0	0	100	100	60-80	40-50	35-40	15-20
	39-65   	Loamy coarse   sand, loamy   sand	SC-SM, SM   	A-2-4, A-4 	0	0-5	95-100   	90-100   	45-65   	30-50   	15-25   	NP-10   
130:			 					 				
Chipeta	0-3 	Very gravelly   silt loam	CL-ML 	A-4	0	0 	70-90 	60-80 	55-75 	40-60 	20-35 	5-10 
	3-6	Clay	CH	A-7-6	0	0	100	100	95-100	85-95	50-60	25-35
	6-14	Weathered										
		bedrock										
	14-20	Weathered   bedrock	 			 	 	 	 	 	 	
Badlands	   0-2	  Unweathered	  CH	  A-7-6	0	0	100	   100	   100	  95–100	  45-55	  25-35
	ĺ	bedrock		İ	İ	İ	ĺ	ĺ	ĺ	İ	İ	İ
	2-20	Bedrock	 		0	0	100	100	100		50-60	25-35
Moncisco	l l 0–3	Extremely	l Igc	  A-2	1 0	I I 0–10	1 120-35	I  15_30	l  15_25	I  10-20	  30_35	  10_15
TOTICIDEO	1	channery sandy	I	1 2	i	1 0 10	120 33	1	1	1	1	1
	 	clay loam	 	i		i	i	İ	 			
	l 3–13	-	GC, GC-GM	  A-2	0-10	15-25	20-25	115-20	115-20	10-20	20-35	5-15
		channery sandy		i		i	İ	i	i			
	İ	loam		i	i	i	İ	i	İ	i	i	i
	13-27	Fragmental	GW	A-1	0-15	15-40	0-5	0-5	0-5	0	0-0	NP
	İ	material	İ	j	j	İ	İ	į	İ	į	į	į
	27-39	Fragmental	GW	A-1	0-15	15-40	0-5	0-5	0-5	0	0-0	NP
		material										
	39-59	Fragmental   material	GW 	A-1 	0-15	15-40 	0-5	0-5	0-5	0	0-0	NP
150:	 		 	 		 		 	 	 	 	 
Riverwash	0-10	Sand	SW-SM	A-1	0	0	100	90-100	20-75	0-20	0-0	NP
		Stratified	SW-SM	A-1	0	0		90-100		0-20	0-0	NP
		coarse sand	İ	İ	i	i	İ	İ	İ	į	į	į

Table 14.--Engineering Index Properties--Continued

Map symbol   and soil name	   Depth	   USDA texture	Classif	fication	Fragi	ments		rcentag sieve n	_	ng	  Liquid	   Plas-
and soil name	 	<u> </u>	Unified	AASHTO	>10  inches	3-10  inches	   4	10	40	200	limit 	ticity index
	   In			 	Pct	Pct	 	 	 	 	Pct	 
150:	 	 	 		l I	 	 	 	 	 		 
Escawetter	0-2	Loamy fine sand	SM	A-2-4	0	0	100	100	65-85	10-20	15-25	2-4
	2-8   	Stratified   loamy fine   sand	SM   	A-2-4 	0   	0   	100   	100   	65-85   	10-20   	15-25   	2-4   
	8-25	Fine sand	SW-SM	A-2-4	0	0	100	100	60-80	0-15	0-0	NP
	25-32   	Stratified silt   loam,   stratified   very fine sand	SC-SM   	A-2-4   	0	0     	100     	100     	70-90     	13-20     	15-25   	4-7     
	32-48	Fine sand	SW-SM	A-2-4	0	0	100	100	60-80	0-20	0-0	NP
	48-65	Fine sand	SW-SM	A-2-4	j 0	0	100	100	60-80	0-20	0-0	NP
		ļ							[			[
160:	0 1	   Time and	CT-7 CT-F	  A-2-4	   0	   0	100	1 100	 	0-20	   0-0	l np
Escawetter	0-1   1-7	Fine sand  Fine sand	SW-SM  SW-SM	A-2-4  A-2-4	1 0	l 0	100   100		65-85  65-85	0-20	0-0	NP
		Stratified very   fine sand,   stratified		A-2-4  A-2-4	0	0   0 	100	1	60-80   	5-35	0-0	NP 
	   16-22   	silt loam  Stratified very   fine sand,   stratified   silt	  SM   	A-2-4 	0	   0   	   100   	   100     	  60-80   	  15-25     	0-0	   NP   
	22-52	!	I  SW-SM	A-2-4	0	0	100	100	  60–80	0-20	0-0	NP
	52-70	Coarse sand	SW-SM	A-2-4	j 0	i 0 I	100	100	  60–80 	0-15	0-0	NP
Riverwash	0-80	Stratified fine   sand	SW-SM	A-3	0	0   	100   	100   	20-55   	0-30	0-0	NP   
Razito	0-1	Fine sand	  SW-SM	A-2-4	0	0	100	100	30-50	5-12	0-0	NP
	1-70	Stratified fine   sand	SW-SM	A-2-4	0	0   	100   100 	100   	30-50   	5-12   	0-0	NP 
205:	İ	İ			j	İ		i	i		i	İ
Penistaja	0-3	Sandy loam	SC-SM	A-4	0	0	95-100	90-100	65-85	45-65	20-30	4-7
		Sandy clay loam		A-2-6, A-6	0			90-100				10-15
	19-65   	Sandy clay   loam, sandy   loam	SC   	A-2-6, A-6	0	0   	95-100   	90-100     	30-50   	25-45   	30-35	10-15   
Tintero	l   0-4	  Fine sandy loam	lsc-sm	  A-2-4, A-4	I I 0	I I 0	l   100	100	  75–95	l 130-50	  15-25	   4-7
11110010		Fine sandy   loam, sandy   loam	SC-SM 	A-4	0	0   0 	100	1	80-100   			4-7
	16-48   16-48	Fine sandy   loam, sandy   loam	SC-SM	A-4 	0	0   	   100 	100 	80-100   	45-65 	  20-25   	4-7   
	48-65	Loamy fine sand	SM	A-2-4, A-4	0	0	   100 	100	70-90	20-40	10-20	NP-4

Table 14.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments	Per	rcentage	e passii	ng		
Map symbol	Depth	USDA texture			.i			sieve n			Liquid	Plas-
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In		 	 	   Pct	Pct	 	 	 	 	   Pct	 
		İ	 	İ			İ		İ			İ
208:			!		[							[
Marianolake		Fine sandy loam		A-4	0	0			80-100			7-10
		1	CL	A-4	0	0			80-100			8-10
			CL	A-7-6	0 1 0	0   0			80-100  70-90			15-25
		Fine sandy loam  Fine sandy loam		A-4, A-2-4  A-4	1 0	l 0			70-90			5-10   7-10
		Loamy sand	SM	A-2-4	1 0	1 0			65-85			7-10  NP-4
	35 70	Loany Sand					100			12 20	10 20	
210:		İ	İ	İ	į	İ	į	İ	İ	İ	İ	į
Marianolake		Fine sandy loam		A-4	0		95-100					4-10
		Sandy clay loam		A-6	0		95-100					10-20
		1 =	CL	A-6	0		95-100					15-20
	47-65	Fine sandy loam	SC-SM, SC	A-4	0	0	95-100 	90-100 	80-100 	45-65 	20-30	4-10
Skyvillage	0-2	Channery sandy   loam	  SC-SM, SM 	  A-2-4, A-4 	0-5	0-15	  50-70 	  45-65 	  30–50 	  20-40 	15-25	  NP-7 
	2-5	Sandy loam	SC-SM	A-4	j 0	0	80-100	75–95	50-70	40-60	20-25	4-7
	5-9	Sandy clay loam	SC	A-6	0	0	80-100	75-95	55-75	45-65	30-35	10-15
	9-15	Sandy clay	SC	A-6	0	0	80-100	75-95	55-75	45-65	30-35	10-15
		loam, channery   sandy clay	 	 				 				
	15_20	loam  Unweathered	 	 			 	l I	 	 	 	 
	13-20	bedrock	 	 		 	 	l	 			 
İ		İ	İ	İ	į	İ	į	İ	İ	İ	İ	į
212:				[								
Rehobeth	0-2	Silty clay loam		A-7-6	0	0			90-100			20-30
		Silty clay loam		A-7-6	0	0			90-100			20-30
	5-12		CH	A-7-6	0 1 0	0   0			90-100			30-40
	12-18 18-32		CH  CH	A-7-6  A-7-6	1 0	l 0			90-100  90-100			30-40
	32-80		CH  CH	A-7-6  A-7-6	1 0	l 0			90-100			30-40  30-40
				ĺ		i						
215:												
Viuda    	0-3	Very cobbly   fine sandy   loam	GC-GM, SC-SM   	A-1, A-2-4 	0	25-45   	55-70   	50-65   	45-60   	20-35   	20-30	4-7   
	3-15	!	CH, CL	A-7-6	0	0-10	95-100	80-100	50-70	50-65	40-55	20-30
		clay										
	15-17	Cobbly clay   loam	CL	A-6	0	10-25 	95-100 	90-100 	55-75 	40-50 	30-40	10-20 
	17-20	Unweathered   bedrock	   	 		   	   	   	   	   		   
Penistaja	0-2 2-22	Sandy loam  Sandy clay loam	SC, SC-SM	A-4  A-2-6, A-6	0   0	0   0	95-100		65-85  35-55			4-10   7-15
			lsc	A-2-6, A-6	1 0	I 0			30-50			7-15
	22-03	loam, sandy   loam		A-Z-0, A-0		 		   	   			
Rock outcrop	0	  Unweathered   bedrock	   	   		   	   	   	   	   		   
İ		[										

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		rcentage sieve n	e passi: umber		  Liquid	   Plas-
and soil name	   	 	Unified	   AASHTO	>10  inches	3-10  inches	4	10	40	200	limit 	ticity index
	   In				Pct	   Pct	 	 	 		   Pct	 
220:	 		 	 		 	 	 	 		 	 
Hagerwest	0-2 2-13	Fine sandy loam  Sandy clay loam	'	A-4  A-6	0   0		95-100  95-100		80-90  60-80		20-30 30-40	4-7  10-20
	13-19	Sandy clay loam	'	A-6	0				60-80			10-20
	19-35	Sandy loam	SC-SM	A-2-4, A-4	0	0	95-100	90-100	50-70	30-50	20-30	4-7
	35–40 	Unweathered   bedrock	   	   		   	   	   	   	   	   	   
Bond	0-2	Fine sandy loam	SC-SM	A-4	0	0	  95-100	  90-100	  80–90	  35–55	20-30	4-7
	2-5	Fine sandy loam	'	A-4	0		95-100				20-30	4-7
	5-14   14-20 	Sandy clay loam  Unweathered   bedrock	SC   	A-6   	0	0-15   	90-100   	85-100   	70-90   	40-50 	30-35   	10-15   
225:	 					 	 	 	 			 
Aquima	0-2	Silt loam		A-4, A-6	0	0	100		95-100			5-15
	2-11   	Silt loam,   silty clay   loam	CL, CL-ML   	A-4, A-6   	0	0   	100   	100   	90-100   	70-90   	20-35   	5–15   
	11-17	Sandy clay loam	CL, SC	A-6	0	0	90-100	85-100	70-90	40-60	30-40	10-15
	17-45   	Silt loam,   silty clay   loam	CL-ML   	A-4 	0	0   	90-100   	85-100   	80-100   	50-70 	25-40   	4-7   
	49-65   	1	CL, SC	A-6   	0   	0-15   	  75–95   	  70–90   	  60–80   	35-55	30-40	  10–15   
Hawaikuh	0-3	  Silt loam	  CL, CL-ML	  A-4, A-6	0	0	  95-100	  90-100	  70–90	  70–90	  20-35	   5–15
		Silty clay loam	'	A-6, A-7-6	0				80-100			15-20
		Clay loam	CL	A-6, A-7-6	0   0				75-95			15-20
	29-39 39-54	Sandy clay loam  Sandy loam	SC  CL-ML, SC	A-2-6, A-6  A-4	l 0				70-90		30-35	5-10
		Silty clay loam		A-6, A-7-6	0						35-45	
230:	 					 	 	 	 		 	 
Sparank		Silty clay loam		A-6, A-7-6	0	0	100				35-45	'
		Clay, clay loam		A-6, A-7-6	0	0	100	100			35-55	
	25-65	Clay, silty   clay	CH, CL 	A-7-6 	0	0	100	100	82-100	85-100	45-60 	20-30
San Mateo	   0-2	  Clay loam	  CL	  A-6, A-7-6	0	   0	   100	   100	I  75-95	  65–85	  35–45	  15-20
	2-15	Clay loam	CL	A-6, A-7-6	0	0	100	100	75-95	65-85	35-45	15-20
	15-30	Sandy clay loam		A-2-6, A-6	0	0	100	100			30-40	
		Clay loam  Sandy loam	CL LCC CM	A-6, A-7-6	0   0	0   0	100	100	75-95  70-90		35-45	
	39-45 45-65	Clay loam	SC-SM  CL	A-4  A-6, A-7-6	0	0	100	100			35-45	4-7  15-20
Zia	   0-3	  Fine sandy loam	  SC-SM	  A-4	0	   0	   100	   100	  80-100	  40-60	  15-30	   4-7
	3-12	Fine sandy loam	SC-SM	A-4	0	0	100		85-100			4-7
	12-20	Fine sandy loam		A-4	0	0	100		85-100			4-7
	20-28 	Sandy loam,   loamy sand	SC-SM, SM 	A-4 	0	0 	100 	100 	65-85 	40-60 	15-25 	NP-7 
	28-70	Fine sandy loam	SC-SM 	A-4 	0	0	95-100 	90-100 	80-100	40-60 	15-25 	4-7

Table 14.--Engineering Index Properties--Continued

Map symbol	   Depth	   USDA texture	Classi	fication	_i	ments	Pe	ercentage sieve n		ng	  Liquid	
and soil name		 	   Unified	AASHTO	>10  inches	3-10    inches	4	10	40	200	limit 	ticity  index
	   In			_	_    Pct	   Pct		-	ļ		   Pct	ļ
	111		 		PCC	PCL		l I	 	 	PCC	
235:	İ	İ	İ	j	j	į į		İ	İ	İ	İ	İ
Notal	0-1	'	CL, CL-ML	A-4, A-6	0	0	100	95-100		60-80		5-15
	1-3   3-13	Clay loam  Sandy clay loam	CL CIMI	A-6  A-4, A-6	0   0	0     0	100 100	95-100	!	65–85  45–65	:	10-20   5-15
	2-13		SC, SC-SM	A-4, A-0	0	0   	100		50-70	42-02	20-30	2-13
	13-27	-	CL	A-6	0	0	100		80-100	•		10-20
	27-44	Silty clay	CH, CL	A-6, A-7-6	0	0	100		90-100			15-30
	44-65	Sandy clay loam	CL-ML, SC,   SC-SM	A-4, A-6 	0	0   	100	95-100 	50-70 	40-60 	20-30 	5-15 
Hamburn	   0–3	  Clay loam	  CL	  A-6	0	   0	100	100	  80-100	  70-90	  35-45	  15-20
110411001111	3-8	Stratified clay		A-6	0	0 1	100	100	80-100		:	15-20
	İ	loam	İ	j	j	j j		İ	į		į	į
	8-29	Sandy clay loam		A-6	0	0	100	100		'		10-15
	29-52	Sandy clay loam		A-6	0	0	100	100	75-95	'		10-15
	52-70 	Clay loam	CL	A-6 	0	0   	100	100	80-100 	70-90 	35-45	15-20 
240:	İ	İ	İ	İ	j	i i		İ	İ	İ	İ	į
Breadsprings		Loam	CL	A-6	0	0	100	100	80-100	'		10-15
	3-7	Loam  Stratified clay	CL CI	A-6  A-6	0   0	0     0	100 100	100	80-100  70-100	'	25-35	10-15  15-25
	/-14	loam	I I	A-0	l o	0   	100	1 100	/ U = 100	02-02		13-23
	14-22	Fine sandy loam	SC, SC-SM	A-2-4, A-4	0	0	100	100	80-100	30-50	15-25	4-10
	22-29 	Stratified silt   loam	CL-ML 	A-4 	0 	0   	100	100 	85-100 	75-85 	15-25 	4-7 
	29-36	Stratified loam	'	A-6	0	0	100	100	80-100	'	25-35	10-15
	36–70 	Stratified silt   loam	CL-ML 	A-4	0	0   	100	100	85–100 	75-85 	15-25 	4-7 
Nahodish	   0-1	  Silt loam	  CL-ML, CL	  A-4	   0	   0	100	100	  80-100	  75-85	  15-25	   5–10
	1-9	Silty clay loam		A-6, A-7-6	0	0	100	100	85-100	•		15-25
	9-17	Silty clay	CH, CL	A-7-6	0	0	100	100	85-100	80-95	40-55	20-30
	17-31		CH, CL	A-7-6	0	0	100	100	85-100		:	25-30
	31-36 36-58		CL	A-7-6  A-4	0   0	0     0	100 100	100	80-100  85-100		:	25-30 8-10
	58-80	'	CL	A-7-6	0	0	100	100	85-100		:	25-35
241:			 			 			 	 		 
Mentmore	0-1	Loam	CL	A-4, A-6	0	0	100	80-100	80-100	60-80	25-35	7-15
	1-2	1 -	CL	A-7-6	0	0	100	95-100	70-90	65-85	35-50	15-25
	2-7	Sandy clay loam		A-6	0	0	100	95-100	!	40-60		10-20
		Clay loam	CL CT	A-7-6	0	0	100	1	70-90	:	:	15-25
		Clay loam  Clay loam,	CL	A-7-6  A-7-6	0   0	0     0	100 100				35-50  35-50	
		sandy clay   loam										
242:		 	 			 			 	 		 
Gish	0-3	Clay loam	CL	A-7-6	0	0	100			•	35-50	
		Clay	CH	A-7-6	0	0     0	100	100			50-60  50-60	
	13-27   27-55	-	CH  CH	A-7-6  A-7-6	1 0	0     0	100 100	100	!		50-60	1
			CL	A-7-6	0	0 1	100			'	35-50	
	64-70	•	CH	A-7-6	0	j 0 j	100	100	80-90	75-85	50-60	25-35

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classi	fication	_i	ments		rcentage sieve n	e passin umber	ng	  Liquid	
and soil name			   Unified	AASHTO	>10  inches	3-10  inches	4	10	40	200	limit 	ticity  index
	In		<del></del>   	-	Pct	Pct   Pct	   	   	   	   	Pct   I	   
242: Mentmore	0-2	  Fine sandy loam	l cc	  A-4	0	     0	     100	     100	    80–100	120 50	115 25	     7-10
Mericiiore		Clay loam	CL	A-7-6	1 0	I 0	100		70-90		1	15-25
		-	CL	A-7-6	1 0	l 0		95-100	!	65-85	!	15-25
			CL	A-7-6	0	0	1		70-90		1	15-25
	24-44	Clay loam	CL	A-7-6	0	0	100	95-100	70-90	65-85	35-50	15-25
		1 2	CL CL	A-7-6  A-7-6	0   0	0 I 0	100   100		70-90  70-90		!	15-25  15-25
	02-70	Ciay Ioan		A-7-0	0	0	100	100	70-90		33-30	
244: Buckle	0-4	  Fine sandy loam	  sc-sm	  A-4	   0	   0	100	   100	  70–90	  40–60	  20-30	   4-7
		Sandy clay loam		A-6	0	0	100		75-95		!	10-20
		Sandy clay loam		A-6	0	0	100		80-100	!	1	10-20
	22-34	Loam	CL	A-6	0	0	100	100	80-100	70-90	30-40	10-20
İ	34-48	Clay loam	CL	A-6	0	0	100	100	80-100	70-90	35-50	15-25
	48-62	Clay loam	CL	A-7-6	0	0	100	100	80-100	70-90	1	15-25
	62-75	Clay loam	CL	A-7-6	0	0 	100	100 	80-100 	70-90 	35-50 	15-25 
245:						į						
Buckle		Loamy fine sand		A-4	0		95-100		!		1	1-4
		1 -	CL	A-7-6, A-6	0		95-100				1	15-25
		Sandy clay loam		A-6	0   0		95-100					10-20
		Clay loam  Fine sandy loam	CL  SC-SM, SC	A-7-6, A-6 A-4, A-2-4	0		95-100  95-100				35-50  15-25	15-25   5-10
Cormogo	0-1	  Fine sandy loam	lee em	  A-2-4	   0	   0	100	105 100	  70–90	125 25	20-35	   4-7
Gapmesa		Loam	CL	A-2-4	1 0	I 0	100		85-100		!	10-15
		1	CL	A-6	1 0	I 0	1 100		85-100		!	10-15
		Clay loam	CL	A-7-6	1 0	l 0			80-100		1	25-35
		Unweathered   bedrock				 						 
Barboncito		  Loamy fine sand		A-2-4	0		  95-100			  25-35	15-25	1-4
	2-6	Sandy clay loam		A-6	0		95-100			35-55		10-20
		Clay loam  Unweathered   bedrock	CL   	A-6, A-7-6	0	0-1   	85-100   	85-100   	70-90   	50-70   	35-50   	15-25   
250:								 				
Hospah	0-3	Extremely   cobbly clay   loam	GC, SC   	A-6   	10-45   	10-45   	50-60   	25-40   	20-40   	10-36   	35-45   	15-20   
	3-15 15-20	1	CH, CL 	A-7-6 	0	0-10 	100 	100 	  75–95   	  75–95   	45-60	20-30
Skyvillage	0-1	  Very channery   sandy loam	  SC-SM, SM 	  A-2-4, A-4	0-5	   0-15 	  50-70 	  45-65 	  30–50 	  20-40 	  15-25 	  NP-7 
	1-5	Sandy loam	SC-SM	A-2-4	0	0	80-100	75-95	50-70	25-34	20-25	4-7
j	5-8	Channery sandy		A-6	0		80-100					10-15
	8-20	clay loam Unweathered bedrock	   			 	 	 	 	 		 

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		centage	e passii	ng	  Liquid	     Plag-
and soil name	l pebru	ODDA CEACULE	l ————————————————————————————————————		>10	3-10		steve II	MIDEL.		limit	
and soll name		   	   Unified	AASHTO		3-10  inches	   4 	10	40	200		index
	In		<del></del>		Pct	Pct			 		Pct	
250:		l I	 	 	 	 	 		 			
Rock outcrop	0	  Unweathered   bedrock		   	   	   	   	   	   	   	   	   
255:		ĺ		ĺ					ĺ	ĺ	İ	
Farview		Loamy fine sand		A-2-4	0	0			70-90	1		1-4
		Fine sandy loam  Fine sandy loam		A-4  A-4	0   0	0   0	100   100		90-100  90-100			4-7   4-7
		Unweathered	SC SFI		l	l						
		bedrock		į	   				 	<u> </u>		
Rock outcrop	0	  Unweathered   bedrock		   	   	   	   		   	   		
258 <b>:</b>		 	 	 	 	 	 		 			
Eagleye	0-2	1	  CL	  A-7-6	0	0-5	90-100	  80–95	  70–90	  60–80	35-50	15-25
	   2-10	loam  Clay	  CH	  A-7-6	l l 0	l l 0	   100	l   95–100	  80–95	  70-90	  45-55	  25–35
		Weathered			 							
		bedrock	   	 	 				i I	 	 	
Atchee	0-2	  Fine sandy loam	  SC-SM	A-2-4	0-1	0-5	100	  80–90	  25–45	5-25	15-25	4-7
j	2-12	Extremely	GC	A-2-4	0-1	35-85	50-75	45-65	25-45	5-25	25-35	7-10
		channery sandy										
	   12 14	clay loam	l Igc	  A-2-4	   0-1	  35–85	  50-75	   15 65	  25 45	5 25	  25-35	   7–10
	12 14	channery sandy			0 1	55 65	50 75	142 02	23 43	5 25	25 55	7 10
		clay loam	İ	İ	İ	İ	İ	İ	İ	İ	į	İ
	14-20	Unweathered										
		bedrock	 	l I	l I	l I	l I		 	 	 	 
Rock outcrop	0	  Unweathered		İ								
		bedrock							 			
260:		 	 	 	 	 	 		 	 	 	 
Quarries And				İ	İ	İ	İ		İ	i	İ	
Pits	0	Unweathered		ļ								
		bedrock	 	l I	 	 	 		 	 		
261:		 	 	 	l İ	l İ	l İ		 	 	 	 
Coal Mine Lands-	0	j	İ	į	i	i	i					
0.65					ļ							
265: Uranium Mined		 	 	 	 	 	 		 		 	 
Lands	0	  Variable	 	İ	 	 	 		 			 
İ		İ	İ	İ	İ	ĺ	ĺ	İ	İ	İ	į	İ
270:		 						115 25	115 05	115 00	105.25	
Alesna	0-1 I	Extremely   cobbly loam	GC, GC-GM 	A-1-b, A-2-4	   0-10	30-55 	20-40 	15-35 	  15-25	15-20 	25-35 	5-15 
	1-10	Gravelly clay	CL, GC, SC	A-7-6	0	0-15	60-80	55-75	50-70	40-60	40-50	15-25
	   10-20	loam  Very gravelly	  GC	  A-2-7, A-7-6	   0-2	   0-10	  50-70	  45–65	  40-60	  30-50	  50–60	  25-35
		clay										
İ	20-26		CH, CL	A-7-6	0-2					1	45-60	
			CL	A-7-6	0-2 	0-10	100		!	:	40-50	
	⊃∠-6U 	Weathered   bedrock	[ 	I 	 	 	 	 	 	 		
		į	İ	İ	İ	İ	İ	İ	İ	į	İ	İ

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	   USDA texture	Classif	ication	İ	nents		rcentage sieve n			  Liquid	
and soil name	 		   Unified	AASHTO	>10  inches	3-10  inches	   4	10	40	200	limit 	ticity index
	   In 	   	   		Pct	   Pct 	   	   	   	   	   Pct 	   
270: Rock outcrop	0	  Unweathered   bedrock		 	   	 	   	     	   	 		   
275: Eldado	     0-2	  Gravelly fine   sandy loam	    GC, GC-GM,   SC-SM	    A-1, A-2-4	0-2	     0-2	    55–75	    50-70	    45–65	20-40		4-10
	2-9   9-13   13-25   25-43	Sandy clay loam   Sandy clay loam   Sandy clay loam   Extremely   gravelly loamy	SC  SC  SC  GC-GM, GM,	A-6   A-6   A-6   A-1-a 	0-2   0-2   0-2   0-10	0-10 0-10 0-10 0-10	100	  90-100  90-100  90-100  20-40 	  55-75  55-75	40-60  40-60  40-60   5-15	30-40  30-40  30-40   0-0	7-15  10-15  10-15   NP
	   43-72 	coarse sand Extremely gravelly coarse sand	  GC-GM, GM,   GW-GM	  A-1-a 	0-10	   0-45 	  25-45   	  20-40 	  10-20   	   5-15   	0-0	   NP 
280:	 	 		ļ			 	 	 			 
Azabache	0-1   	Extremely   gravelly clay   loam	GC, GM   	A-2-6   	0-1   	0-5   	15-40   	10-30   	10-25   	10-20   	35-40   	10-15   
	1-5 5-17	Clay  Gravelly sandy   clay loam	CH, CL  SC	A-7-6  A-2-6	0   0		90-100  50-70 				1	20-30  10-15 
	17-32	Extremely gravelly sandy	  GC 	A-2-6	0	0-5	20-40	  15–35 	  10-25 	5-20	30-40	  10-15 
	   32–50 	clay loam  Extremely   gravelly fine	  GC-GM, GM 	  A-1-a 	0	   0-5 	  20-40 	  15-30 	  10-25 	5-15	20-30	   1-4 
	   50–62   	sandy loam Very gravelly fine sandy loam	  GM, SC-SM   	  A-4 	   0 	   0-5 	  60–80   	  55–75   	  50-70   	  40-60   	  15-25   	   1-4   
290:	 		 				 	 	 			
Rock outcrop	0	Unweathered   bedrock		   	   		   	   	   			   
Westmion	   0-2 	  Gravelly clay   loam	CL  CL	  A-6, A-7-6 	0-10	   0-15 	   100 	  80-100 	  40-60 	  35-55 	35-45	  15-20 
	2-14   14-20 	Clay  Weathered   bedrock	CH, CL   	A-7-6   	0	0-10   	100   	75–85   	65-85   	60-80   	45-60   	20-35   
Skyvillage	   0-2   2-13   13-20		  SC-SM  SC-SM, SM   	  A-1-b, A-2-4  A-2-4, A-4 	0-15   0 	0-10   0-5 	   100  85-100   	  90–100  75–95   ––– 	  30-50  40-60   	  20-40  30-50 	  15-20  20-30 	   4-7   1-7 
291: Rock outcrop	     0 	     	     		   	   	     	     	     	   	   	     

Table 14.--Engineering Index Properties--Continued

	 		Classif	ication	Fragi	ments	Pei	rcentage	e passir	ng		
Map symbol	Depth	USDA texture						sieve n	umber		Liquid	
and soil name			Unified	AASHTO	>10  inches	3-10  inches	4	10	40	200	limit 	ticity index
					ļ	ļ			ļ	ļ	ļ	ļ
	In	 		 	Pct	Pct		 		l I	Pct	 
291:				1	 	 		l I	 	 	 	 
Eagleye	0-2	Very gravelly   silty clay   loam	GC	  A-7-6 	0-10   	0-10   	50-70	45-65 	40-60 	  35–55 	35-50 	  15–25 
	2-7	Silty clay loam	CL	A-7-6	0	0	  70–90	  65–85	65-85	  60-80	35-50	  15-25
		Silty clay loam		A-7-6	0					'	35-50	
	13-20	Weathered   bedrock		   	   	   	   	   	   	   	   	   
Atchee	0-2	Very gravelly   fine sandy   loam	GM	  A-2-4 	   0-15 	   0-10 	50-65	  30–55 	  20–45 	   5-25 	  15-25 	   1-4 
	2-8	1	GM	  A-2-4 	0	  35–55 	  50–65 	  30–55 	  20-45 	   5–25 	15-25	   1-4 
	8-20	Todiii  Unweathered   bedrock		   	   	   			   	   		   
300:		 		 	 	 			 	 	 	 
Regracic	0-2	Gravelly sandy   clay loam	SC	  A-2-6, A-6 	   0 	0-1	  50-70 	  45–70 	30-50	20-40	30-40	  10-15 
	2-31	Clay, clay loam	CH, CL	A-7-6	0	0	95-100	90-100	80-100	75-95	40-55	15-25
	31-45	Very gravelly	GC	A-2-7	0	0	35-55	30-50	20-40	15-35	40-50	15-25
	   45 50	sandy clay  Clay loam	CL	  A-6, A-7-6	l I 0	l I 0	   05 100	  an 1nn	  70 00	len on	  35–45	  15 20
		Stratified very   gravelly sandy   clay loam,   stratified   clay loam		A-2-6     	0   0   						30-40	
	60-80	Gravelly sandy   loam	SM, SC-SM	  A-4 	0   	0-1   	60-80	55-75	  50–70   	40–60 	15-30   	1-7 
305:				İ	İ	İ		İ	İ	İ	İ	İ
Celavar		1	CL	A-4	0	0			80-90	'	•	7-10
		Sandy clay loam		A-2-6	0	0			80-100	'	•	10-15
		Sandy clay loam  Unweathered	SC	A-2-6	0	0	100	95-100 	  80-T00	20-35 	30-35	10-15
	1 21 40	bedrock			 	 			 	 		 
		j		j	į	į	İ	İ	İ	İ	į	İ
Atarque		-		A-2-4, A-4	0	0	100		70-90	'	•	4-7
	3-14 	loam, clay	CL, SC	A-2-6, A-6 	0	0	100	100	30-50	30–50 	25-40	7-20 
	14-20	loam  Unweathered   bedrock		     	     	     		   	   	     	   	     
308:												
Fikel	0-3	Clay loam	CL	A-6	0	0	95-100	90-100	75-95	70-90	35-40	15-20
	3-14	-	CH, CL	A-7-6	0						45-55	
	14-32		CH, CL	A-7-6	0						45-55	
		Sandy clay loam		A-6	0						25-35 40-50	
	50-65 65-70	Clay  Sandy clay loam	CL SC	A-7-6  A-6	0   0						25-35	

Table 14.--Engineering Index Properties--Continued

Map symbol   and soil name	   Depth	USDA texture	Classif	ication	.i	ments		rcentage sieve n	e passii umber	ng		   Plas-
and soil name	   		   Unified	AASHTO	>10  inches	3-10  inches	4	10	40	200	limit 	ticity index
	   In 		   		Pct	   Pct 	   	   	   	   	Pct	   
308:	 	İ	İ	İ								
Venzuni	0-7	Clay	CH	A-7-6	0	0			80-100			35-55
	7-22	Clay	CH	A-7-6	0	0			90-100			50-65
	22-42   42-56	Clay  Sandy clay	CH CH, CL	A-7-6  A-7-6	0   0	0   0	1		90-100  75-95	!	1	50-65  20-30
	56-75	Sandy Clay loam		A-6, A-7-6	0	0			75-95		1	15-20
310:	 	 	 	 		 		 	 	 		 
Parkelei	l 0-2	Sandy loam	SC-SM, SM	A-2-4, A-4	0	l 0	90-100	  85–100	  70–90	  30–50	20-30	  NP-7
	2-21	Sandy clay loam	SC	A-6	0	0	90-100	85–100	60-80	40-50	30-40	10-20
	21-55	Sandy clay loam	SC	A-6	0	0	90-100	85-100	60-80	40-50	30-40	10-20
	55-65	Clay loam	CL	A-6, A-7-6	0	0	90-100	85-100	70-90	65-85	35-45	15-20
312:						 						
Bluewater	0-2	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	60-80	50-70	25-35	4-15
	2-11	Clay loam	CL	A-6	0	0	100	100	65-85		!	10-20
	11-28	Clay loam	CL	A-6	0	0	100	100	1		1	10-20
	28-50	Clay loam	CL	A-6	0	0	100	90-100		!	1	10-20
	50-70   70-80	Clay  Clay	CH, CL CH, CL	A-7-6  A-7-6	0   0	0   0	100   100	90-100  90-100		!	!	20-30 20-30
	70 00											
315:		I Town	lar ar m				100	100			100.20	
Flugle	0-3 3-10	Loam  Sandy clay loam	CL, CL-ML	A-4, A-6  A-6	0   0	0   0	100   100	100   100	1	!	20-30 30-40	4-15  10-20
	10-28	Clay loam	CL	A-6	1 0	l 0	1 100	100			1	15-20
	28-65	Sandy loam	SC-SM	A-4	0	0	100	100			20-30	4-7
Examp	   0-2	  Learn fine good	l cm	  A-2-4, A-4	   0	   0	   100	   100	  80-100		  15-25	   1-4
Fragua	0-2   2-19	Loamy fine sand  Sandy loam	SC-SM	A-2-4, A-4	1 0	l 0	100	100			20-30	1 4-7
	19-65	Sandy loam	SC-SM, SM	A-4	0	0	100	100			15-30	1-7
316:	 					 						
Royosa	l   0-2	  Loamy fine sand	l Ism	  A-2-4	1 0	I I 0	1 100	1 100	  75–90	  15-35	10-20	  NP-4
	2-6	Loamy fine sand		A-2-4	0	l 0	100	100			10-20	NP-4
	6-65	Loamy fine	SW-SM, SM	A-2-4	0	0	100	100	75-90	5-30	'	NP-4
	     	sand, loamy sand, fine sand	 	 	     	     	     	     	     	     	     	     
317:				İ								
Highdye		Fine sandy loam			0	0-30		75-95		!	20-30	4-7
	3-5	Clay loam	CL	A-6, A-7-6	0	:	85-100	:	:	:	35-45	
	5-12	Clay, sandy	CH, CL	A-7-6	0	0-15	85-100	80-100	75-95	70-90	45-60	20-35
	   12-20	clay  Unweathered	 	1	 	 		 		 		
	12-20	bedrock										
Evpark	   0-5	Loam	CL, CL-ML	  A-4, A-6	   0	   0	   00_100	  85_100	  75-95	 	  20-35	   5–15
=vbarv	0-5   5-10	Clay loam	CL, CL-ML	A-4, A-6	1 0	l 0	100	100	75-95		1	15-20
	10-24	Sandy clay loam		A-6, A-7-6	1 0	l 0	100	100			'	10-20
	24-40	Unweathered										
	l	bedrock		Į.	[		[		[			[

Table 14.--Engineering Index Properties--Continued

Map symbol	   Depth	USDA texture	Classif	ication	_i	ments		rcentag sieve n	e passi: umber	ng	  Liquid	1
and soil name			   Unified	AASHTO	>10  inches	3-10  inches	4	10	40	200	limit 	ticity index
	In				Pct	Pct			 	 	Pct	
317:			 	 		 	 	 	 	 	 	 
Bryway	0-4	Sandy loam	SC-SM	A-4	0	0	90-100	85-100	70-90	45-65	20-30	4-7
	4-10	Clay, clay loam	CH, CL	A-7-6	0	0	100	100	75-95	70-90	40-60	15-30
	10-23	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-30
	23-40	Unweathered   bedrock	 	[ [		 	 					
320:		 	 	 		 	 	 	 	 	 	 
Parkelei	0-4	Fine sandy loam	SC-SM	A-4	0	0	100	95-100	50-70	40-60	15-25	4-7
	4-18	Sandy clay loam	sc	A-6, A-7-6	0	0	100	95-100	60-80	40-50	30-45	10-20
	18-28	Sandy clay loam	SC	A-6, A-7-6	0	0	100	95-100	60-80	40-50	30-45	10-20
	28-39	Sandy clay loam	SC	A-6, A-7-6	0	0	100	95-100	60-80	40-50	30-45	10-20
	39-52	Sandy clay loam	SC	A-6, A-7-6	0	0	100	95-100	60-80	40-50	30-45	10-20
	52-70	Fine sandy loam	SC-SM	A-4	0	0	100	95-100	50-70	40-60	15-25	4-7
Fraguni	0-4	Loamy fine sand	  SM	A-2-4, A-4	0	0	100	100	  75–95	  20-40	  15-20	1-4
	4-20	Fine sandy loam	SC-SM	A-4	0	0	100	100	55-75		20-30	4-7
	20-46	Loamy fine sand	SM	A-2-4, A-4	0	0	100	100	75-95	20-40	15-20	1-4
	46-58	Sandy clay loam	'	A-6	0	0	100	100	75-95	!	30-40	10-20
	58–70 	Fine sandy loam	SC, SC-SM 	A-4	0	0 	100 	100 	55-75 	40-60 	20-30 	4-10 
325:		į		į		į						
Venzuni	0-2	Silty clay	CH	A-7-6	0	0	100	100	95-100	!	1	30-40
	2-12	Silty clay	CH	A-7-6	0	0	100	100		90-100		30-40
	12-46	Clay	CH	A-7-6	0	0	100	100	100	95-100	1	45-65
	46-65 	Clay 	CH 	A-7-6 	0	0 	100	100	100 	95-100 	65-85 	45-65 
332:				į lautos		į						
Evpark	0-2	Fine sandy loam	'	A-4	0	0	1	85-100	1	!	20-30	7-10
	2-9	Clay loam, loam	CL	A-6	0	0   0	100   100	100   100	80-100  80-100	!	35-40 35-40	15-20  15-20
	9-36 36-40	Clay loam  Unweathered	I CL	A-6	0	0	1	1		70-90 	35-40 	15-20
	30-40	bedrock	   									
Arabrab	   0-2	  Gravelly fine	  SC-SM	  A-2-4	0-10	   0	   100	  80-100	  55-75	  30–35	  20-25	   4-7
		sandy loam										
	2-7	Sandy clay loam	'	A-6	0	0	1	1	60-75	!	30-35	7-15
	7-12	Clay loam	CL	A-7-6	0	0		1	60-75	!	35-50	15-25
	12-17	1	CL	A-7-6	0	0	75-90	70-85	60-75	45-60	35-50	15-25
		loam										
	17-20 	Unweathered   bedrock	 	 		 						
335:	<u> </u>	 	 	 		 	 	 	 	 	 	 
Venadito	0-3	Clay	CH, CL	A-7-6	0	0	100	100	90-100	85–100	40-60	20-40
	3-30	Clay	CH	A-7-6	0	0	100	100	90-100			45-65
	30-65	Clay	CH	A-7-6	0	0	100	100	90-100	85-100	65-85	45-65
336:	 		 	 		 	 	 	 	 	 	 
Nuffel	0-2	Silt loam	CL, CL-ML	A-4, A-6	j 0	0	100	100	80-100	75-95	20-35	5-15
	2-10	Sandy loam	CL-ML, SC-SM	A-4	j 0	0	100	100	70-90	45-65	20-30	4-7
	10-17	Silt loam	CL, CL-ML	A-4, A-6	j 0	0	100	100	75-95	75-95	20-35	5-15
	17-20	Loam	CL, CL-ML	A-4, A-6	0	0	100	100	70-90	60-80	20-35	5-15
	20-47	Silty clay loam	CL	A-6	0	0	100	100	80-100	80-100	35-40	15-20
	47-65	Silty clay	CH, CL	A-7-6	0	0	100	100	85-100	80-100	45-60	20-30
				1								

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	i	ments		rcentage sieve n	e passii umber	ng	  Liquid	
and soil name			   Unified	AASHTO	>10  inches	3-10  inches	   4	10	40	200	limit 	ticity index
	In		   	-	Pct	Pct	   	   	   	   	Pct	   
336: Venadito	0-2 2-9		  CH  CH	  A-7-6  A-7-6	   0   0	   0   0   0	   100   100   100	100	85-100	80-100		50-65
	9–11 11–65	Silty clay  Clay	CH  CH	A-7-6  A-7-6	0	0	100	100   100	85-100  85-100	'	75-65	30-40  50-65
338: Zyme	0-3	  Channery silty   clay loam	  -  CL	  A-7-6	     0	     0	     100	    80-100	    75–95 	    60–80 	    35–50	    15-25 
	3-8 8-15 15-20	Silty clay   Channery clay   Weathered   bedrock	CL  CH 	A-7-6  A-7-6 	0 0 0	0 0 0	100   100 	75–95  75–95   –––		'	!	25-35  25-35 
Lockerby	0-1 1-11 11-15 15-26 26-40	Silty clay loam   Clay   Clay   Clay   Clay   Weathered   bedrock	  CL  CL  CL, CH  CL, CH	A-6   A-6   A-7-6   A-7-6	0   0   0   0 	   0   0   0   0 	100   100   100   100   100 	100  85-100   100   100 	  80-100  75-95  75-95  80-100 	70-90  70-90	30-50 40-60	  11-15  10-20  15-30  15-30 
345:												
Rock outcrop	0	Unweathered   bedrock	 							===		
Tuces	0-1	  Extremely   gravelly clay   loam	  GC 	  A-2-6, A-2-7   	   0-25   	  10-30   	  25–45   	  20-40 	  20-35   	  20-30   	  35–45   	  15-20   
	1-4 4-24 24-40	Clay  Clay  Weathered   bedrock	CH  CH   	A-7-6  A-7-6   	0   0 		95-100  95-100   				1	25-30  25-30   
350: Toldohn	0-4	  Gravelly clay   loam	  CL 	  A-6, A-7-6	   0-10 	   0-10 	  80-100 	  75–95 	    65–85 	  60–80 	  35–45 	    15-20 
	4-11 11-20	Clay  Weathered   bedrock	CH, CL   	A-7-6   	0-10	0-10 	100   	100 	70–90   	70-90   	45-60   	20-30 
Vessilla		Fine sandy loam  Fine sandy loam  Unweathered   bedrock	•	A-4   A-4 	0 0 0		  80-100  80-100 				  15-30  15-30 	4-7   4-7 
Rock outcrop	0	Unweathered   bedrock	     	     	     	     	     	   	     	     	     	     
351: Rock outcrop	0	Unweathered   bedrock	   	   	   	   	   	   	   	   	   	   
Vessilla	0-5 5-20	Fine sandy loam  Unweathered   bedrock	  SC-SM, SM   	A-2-4, A-4 	0 	   0-15   	  80-100   	  75–100   	  70–90   	  30-50   	  15-30   	   1-7   

Table 14.--Engineering Index Properties--Continued

			Classif	ication	Fragr	nents			e passin	ng		
Map symbol	Depth	USDA texture		1	.		:	sieve n	umber			Plas-
and soil name	   		   Unified	AASHTO	>10  inches	3-10 inches	   4	10	40	200	limit 	ticity index
	   In			-   	Pct	Pct	 	 	 	 	Pct	
352:	 		 				 		 	 		
Zia	l   0–3	Sandy loam	  SC-SM	  A-4	1 0	l l 0	1 100	l   100	  70–90	I   45-65	120-30	4-7
Ziu		-	SM, SC-SM	A-4	0	0	100		65–85 		•	1-7
	31-65	Fine sandy loam	SC-SM	A-4	0	0	95-100	90-100	80-100	40-60	15-25	4-7
353:	 		 				 		 	 		 
Mido		Loamy fine sand  Loamy fine sand		A-2-4  A-2-4	0 0	0 0	100   100		85-95  80-95		0-14	1-4
354:	 					 	 	 	 	 		
Knifehill	0-2	Loam	CL	A-6	0	0	100	100	80-100	70-90	25-35	10-15
	2-6	Clay loam	CL	A-6, A-7-6	0	0	100	100	80-100	75-90	35-45	15-20
	6-11	Clay loam	CL	A-6, A-7-6	0	0	100	100	80-100	75-90	35-45	15-20
	11-26	Clay	CH, CL	A-7-6	0	0	100	100	85-100	80-95	45-55	20-30
	26-35	Clay	CH, CL	A-7-6	0	0	100	100	85-100	80-95	45-55	20-30
	35–65 	Clay, clay loam	CH, CL	A-7-6	0	0 	100 	100 	85-100 	80-95 	40-55 	15-30 
355:							İ		<u> </u>		į	
Rizno	0-3   3-8 	Sandy loam  Sandy loam,   fine sandy	SC-SM  SC-SM 	A-2-4, A-4  A-2-4, A-4 	0   0 				65-85  65-85 			4-7   4-7 
	     8-20	loam, channery   sandy loam  Unweathered	   		   	   	   	   	   	   		   
	0 20   	bedrock	   				   		   	   		   
Tekapo	0-2	Channery silty   clay loam	CL	A-6, A-7-6	0	0	  75–95 	70-90	  65-85 	  60–80 	35-45	  15-20 
	2-10 	Silty clay,   silty clay   loam	CH, CL   	A-7-6 	0	0 	90-100   	85–100   	80-100   	75–95   	40-55 	20-30   
	10-20	Weathered   bedrock					   			   		
Rock outcrop	   0 	  Unweathered   bedrock	   				   		   	   		   
357:			 				 		 	 		 
Heshotauthla	0-3	Clay	CH, CL	A-7-6	0	0	100	100	90-100	80-90	45-55	20-30
	3-18	Clay	CH	A-7-6	0	0	100	100	90-100	80-90	50-65	30-45
	18-65	Clay	CH	A-7-6	0	0	100	100	90-100	80-90	50-65	30-45
360:	 		 				 			 		
Hosta	0-2	Loam	CL, CL-ML	A-4, A-6	j 0	0	95-100	90-100	70-90	65-85	20-35	5-15
	2-4	Clay loam	CL	A-6, A-7-6	0	0	95-100	90-100	80-100	70-90	35-45	15-20
	4-24	Clay loam	CL	A-6, A-7-6	0	0	95-100	90-100	80-100	70-90	35-45	15-20
	24-51	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-30
	51-65	Sandy clay loam	CL, SC	A-6	0	0	95-100	90-100	50-70	45-65	30-35	10-15
Concho	   0-1	  Clay loam	  CL	  A-6, A-7-6	0	   0	   100	  95-100	  80-100	I  70-90	  35–45	  15-20
	1-5	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-35
	5-32	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-35
	32-51	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-35
	51-65 	Clay 	CH, CL 	A-7-6	0	0 	100 	100 	80-100 	75–95 	45-60 	20-35 
	1	I .	l .	1	1		1		I	1	1	1

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	İ	ments		rcentage sieve n	e passii umber	ng	  Liquid	
and soil name			   Unified	AASHTO	>10  inches	3-10  inches	   4	10	40	200	limit	ticity  index
	In			-	   Pct	   Pct	 	 	 	 	   Pct	 
361: Monpark	0-4 4-7		  CH, CL  CH, CL	  A-7-6  A-7-6	     0   0	     0   0	     100   100	     100   100	    80-100  80-100		    45-60  40-60	    25-35  20-40 
	7-27 27-40	loam  Clay  Weathered   bedrock	  CH, CL 	  A-7-6   	   0   	   0 	   100   	   100   	  80-100   	  75–95   	  45-65   	  25–45   
365: Vessilla	0-2 2-6 6-15	Fine sandy loam   Fine sandy loam   Fine sandy loam   Unweathered   bedrock	SC-SM			'	  80-100  90-100  90-100   	85-100	60-80		  20-30  20-30  20-30   	   4-7   4-7  NP-10   
Rock outcrop	0	Unweathered   bedrock				   	   	   	   	   		   
366: Bosonoak	0-2 2-5 5-28 28-40 40-63 63-80	Clay loam  Clay loam  Loam  Loam	CL CL CL CL CL CL	  A-6  A-6  A-6  A-6  A-6  A-4			   100   100   100   100   100   100	95-100  95-100  95-100  95-100	60-80 60-80	50-70  50-70  60-80  60-80		  15-20  15-20
367: Chunkmonk	0-1	  Very gravelly   fine sandy   loam	  GM 	   A-1-b, A-2-4,   A-4	0	     5-15 	    35–55 	    30-50 	    25-45 	    20-40 	    10-20 	     1-4 
	1-4	Very cobbly	GC-GM, GC	A-2-4, A-4	0	  30–60	50-70	45-65	35-55	30-50	15-30	7-10
	4-8 8-10 10-20	loam  Gravelly loam  Gravelly loam  Unweathered   bedrock	  SC  SC	  A-4  A-4 	   0   0 	   5-15   5-15 	  60-80  60-80 			  40-60  40-60 	  15-30  15-30 	   7-10   7-10 
368: Simitarq		  Sandy loam  Sandy clay loam  Sandy clay  Unweathered   bedrock	SC-SM, SM CL, SC CL, SC	  A-2-4, A-4  A-6  A-7-6	   0   0   0 	0-10	!	75-95	50-70	  30-50  45-65  35-55 	  15-25  30-40  40-50 	   1-7  10-15  15-25 
Celavar	11-27 27-31	Slightly   decomposed   plant material   Sandy loam   Sandy clay loam   Sandy clay loam   Sandy clay loam   Unweathered   bedrock	SC	 		0	100	95-100   95-100	  80-95  80-90	20-35  15-35	      20-25  30-35  30-35  35-40 	10-15

Table 14.--Engineering Index Properties--Continued

			Classi	fication	Fragi	ments	Pe:	rcentage	e passi	ng		 
Map symbol	Depth	USDA texture	<u> </u>		_		:	sieve n	umber			Plas-
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In			-	Pct	Pct	 	 	 	 	Pct	 
375:			 				 	 	 	 	 	 
Todest	0-1	Fine sandy loam	ISC-SM	A-2-4, A-4	0	0	l 195–100	l 85–100	65-85	1 130-50	20-25	4-7
	1-3	Fine sandy loam		A-4	0	0	100	95-100			20-30	4-10
	3-10	Sandy clay loam		A-4	i o	0	100	95-100	:	!	30-40	7-15
	10-18	Sandy clay loam		A-4	i o	0		95-100		!	30-40	7-15
	18-25		CL	A-4	0	0		90-100			20-30	7-10
	25-40	Unweathered		i								
		bedrock		i	i	i	i	i	i	i	i	i
Shadilto	0-1		GC-GM, GM	A-2-4	i 0	0-15	30-50	25-45	15-35	5-25	15-25	1-7
		sandy loam		i	i	i		i				i
	1-9	! -	SC-SM, SM	A-2-4, A-4	i o	i o	  85–100	  80-100	50-70	  30–50	15-25	1-7
	9-13	-	SC-SM, SM	A-2-4, A-4	i o	0-10			45-65			1-7
	13-15	! -	SC-SM, SM	A-2-4, A-4	i o		80-100		:	!	15-25	1-7
	15-20	Unweathered		i	i			i 				
		bedrock		į	į	į	į	į	į	į	į	į
376 <b>:</b>						 	 	 	 	 	 	 
Todest	0-1	Fine sandy loam	SC-SM	A-2-4, A-4	i o	i 0	90-100	85–100	60-80	30-50	20-30	4-7
	1-8	Sandy clay loam		A-6	i o	i 0	95–100	90-100	70-90	40-50	30-40	10-15
	8-14	Sandy clay loam		A-6	i o	0-5			70-90	40-50	30-40	10-15
	14-24		CL, SC	A-6	i o		80-100				30-40	10-15
		clay loam		i	i	i	i	İ	i	į	i	i
	24-40	Unweathered		i	j	i					i	i
		bedrock			į	į	į	į	į	į	į	į
380:						 	 	 	 	 	 	 
Berryhill	0-2	Clay	CH, CL	A-7-6	j 0	0	90-100	80-100	80-100	75-95	45-55	20-30
-	2-12	Clay	CH	A-7-6	j 0	0	100		90-100			25-40
	12-26	Clay	CH	A-7-6	j 0	0	100	100	90-100	80-100	50-65	25-40
	26-39	Clay	CH	A-7-6	0	0	100	100	90-100	80-100	50-65	25-40
	39-70	Clay	CH	A-7-6	0	0	100	100	90-100	80-100	50-65	25-40
Casamero	0-3	Clay	  CH	  A-7-6	0	0	  90-100	  85-100	  75–95	  70–90	  60-75	  35–50
	3-11	Clay	CH	A-7-6	0	0	100	100	90-100	80-100	65-85	40-60
	11-18	Clay	CH	A-7-6	0	0	100	100	90-100	80-100	65-85	40-60
	18-20	Weathered										
		bedrock	 									
385:			 				 	 	 	 	 	 
Mcorreon	0-2	Extremely	GC	A-2-6	0-2	30-50	25-45	20-40	20-40	15-35	25-35	10-15
		cobbly loam										
	2-5	Clay loam	CL	A-6, A-7-6	0	0-2	90-100	85-100	70-90	60-80	35-45	15-20
	5-16	Clay	CH, CL	A-7-6	0	0-2	100	95-100	80-100	75-95	45-65	20-40
	16-22	Clay	CH, CL	A-7-6	0	0-2	100	95-100	80-100	75-95	45-65	20-40
	22-70		CH, CL	A-7-6	0	0-2	90-100	85-100	75-95	70-90	45-65	20-40
	70-74	Unweathered										
		bedrock	 					 		 		
Rock outcrop	0	Unweathered	 					 				
		bedrock		i	i	i	i	į	i	į	i	i
j		İ		İ	į	į	İ	İ	į	İ	į	į

Table 14.--Engineering Index Properties--Continued

	<u> </u>	<u> </u>	Classif	ication	Fragi	nents		_	e passii	ng	<u> </u>	<u> </u>
Map symbol	Depth	USDA texture			-		:	sieve n	umber		Liquid	
and soil name	 		   Unified	AASHTO	>10  inches	3-10 inches	   4	10	40	200	limit 	ticity index
	   In 		   		Pct	   Pct 	   	   	   	   	Pct	   
390: Banquito	     0-2	  Very fine sandy	    CL-ML, SC-SM	    A-4	0	     0-5	    80-100	    75–95	    70-90	    45-55	20-30	     4-7
	ĺ	loam	ĺ	ĺ				ĺ	ĺ	ĺ	İ	ĺ
	2-9	Clay loam	CL	A-6	0		95-100		1	55-75	1	10-20
		Loam	CL, SC	A-6	0		85-100		1	1	1	10-15
		Sandy clay loam  Sandy loam	SC-SM	A-2-6, A-6  A-2-4, A-4	0		85-100		40-60  35-55	1	1	10-15   4-7
		Unweathered   bedrock	SC-SM   	A-Z-4, A-4   				   		20-40		4-7
395:												
Cabezon	0-2 	Very cobbly   loam	GC 	A-2-6 	0-20	20-40 	30-50 	20-45 	20-40	15-35 	25-35 	10-15 
	2-6		CL	A-6, A-7-6	0		90-100			1	35-45	!
		Weathered	CH, CL	A-7-6 	0	0	90-100	85-95 	75-95 	10-90 	45-65 	20-40
		bedrock			ļ							
	17-20   	Unweathered   bedrock	   	   		   	   	   	   	   	   	   
Mcorreon	l 0-2	Loam	  CL	  A-6	0-2	   0-10	  80-100	  75–95	  60–80	  55–75	  25-35	  10-15
	2-13	Clay	CH, CL	A-7-6	0				80-100		•	20-40
	13-19	Clay	CH, CL	A-7-6	0	0-2	85-100	80-100	80-100	75-95	45-65	20-40
	19-27	Clay loam	CL	A-6, A-7-6	0	0-2	85-100	80-100	70-90	60-80	35-45	15-20
		Clay loam  Unweathered   bedrock	CL   	A-6, A-7-6   	0 	0-2   	85-100   	80-100   	70-90   	60-80   	35-45   	15-20   
400:	 	 		 		 	 	 	 	 		 
Shoemaker	0-2	Loamy fine sand	SC-SM, SM	A-2-4	0	0-10	90-100	85-100	70-90	20-35	15-25	1-7
	2-7	Fine sandy loam	SC-SM	A-2-4, A-4	0	0-10	90-100	85-100	70-90	25-45	20-30	4-7
	7-20	Sandy clay loam	SC	A-6	0	0-10	90-100	85-100	55-80	40-60	25-35	7-15
	20-28	Sandy clay loam  Unweathered   bedrock	SC   	A-6   	0	0-10   	90-100   	85-100   	55-80   	40-60   	30-40	7-15   
Stozuni	   0-2	  Sandy loam	  SC-SM, SM	  A-2-4	0	   0	   100	   100	  55-75	  15-35	  15-30	   1-7
	,	Fine sandy loam		A-2-4	0	0	100	100	70-90	15-35	15-30	4-7
		Fine sandy loam  Unweathered   bedrock	SC-SM   	A-2-4   	0	0   	100   	100   	70-90   	15-35   	15-30   	4-7   
403:												
Valnor		1 -	CL	A-6	0						35-40	
		Clay loam	CL	A-6	0	0			1	1	35-40	!
	20-34	Clay	CH, CL CH, CL	A-7-6  A-7-6	0   0	0   0	100   100				45-60  45-60	
		Weathered   bedrock	CH, CL			   	 			   		
Techado	   0-3	Gravelly clay	CH, CL	  A-7-6	0	   0-10	  65–80	  60-75	  55–75	  55–75	  45-60	  20-30
	3-13	Clay  Weathered   bedrock	CH, CL   	A-7-6 	0	0 10	100 		1	1	45-60 	!
	 	bedrock 	 	 		 	 	 	 	 	 	 

Table 14.--Engineering Index Properties--Continued

Map symbol	   Depth	USDA texture	Classif	ication	i	ments		rcentage sieve n	e passir umber	ng	  Liquid	
and soil name			   Unified	AASHTO	>10  inches	3-10  inches	   4	10	40	200	limit 	ticity  index
	   In		 	 	   Pct	   Pct	 	 	 	 	   Pct	 
404:	j I	 	 	  -		i I	   	i I	 	 	 	 
Rock outcrop	0	Unweathered   bedrock						   		   		   
Techado	   0–5 	  Channery clay   loam	  CL 	  A-6, A-7-6 	   0 	   0-10 	  65–80 	  60-75 	  50-70 	  50–70 	  35–45 	  15-20 
	5-8	Clay	CH, CL	A-7-6	0	0	100	100	90-100	85-100	45-65	25-45
	8-17	Clay	CH, CL	A-7-6	0	0	100	100	90-100	85-100	45-65	25-45
	17-20	Weathered   bedrock	 	 			 					
Stozuni	   0-1 	  Gravelly sandy   loam	  SC-SM, SM 	  A-2-4, A-4 	   0 	   0-15 	  65–80 	  60-75 	  50-70 	  30–50 	  15-30 	   1-7 
	1-7	!	  SC-SM 	  A-2-4, A-4 	0	   0-10 	  70–80 	  65–75 	  50-70 	  30–50 	  15-30 	4-7 
	7-20	Unweathered   bedrock	 	 		   	   	 	 	   	   	   
405:	 	1	 	 		l I	l I	 	 	 	 	l I
Fortwingate	0-1	Slightly   decomposed					   	   		   		
	1 4	plant material	07. 07. 15						160.00		105.25	
	1-4   4-9	!	CL, CL-ML CH, CL	A-4, A-6  A-7-6	0 1 0	0-10 0	75-95   100	70-90   90-100	60-80		25-35 45-55	5-15  25-35
		Clay Toan	CH CL	A-7-6	l 0	l 0	100		80-100			35-40
		Unweathered   bedrock				   		   				
Owlrock	   0-1 	  Very gravelly   loam	  GC-GM 	  A-1-b, A-2-4 	   0-10 	  15-35 	  30–50 	  25–45 	  20-40 	  15-35 	  20-30 	   5-10 
	1-6	Very cobbly   loam	  CL, GC, SC 	  A-6 	5-15	  55–75 	  60–80 	  55–75 	  45–65 	  40–60 	30-35 	  10-15 
	6-13	Very cobbly   loam	SC, CL, GC	  A-6 	5-15	55-75	  60–80 	55–75 	  45–65 	  40–60 	30-35 	  10-15 
	13-20	Unweathered   bedrock	 	 								
406:	 	l I	 	 	 	 	 	 	 	 	 	 
Polich	0-13	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	75-95	25-35	5-15
	13-23	1	CL	A-6	0	0	100		85-95	'		10-15
	23-40	Clay loam	CL	A-6, A-7-6	0	0	100	95–100	90-100	75-95	35-45	15-20
	40-48	Clay loam	CL	A-6, A-7-6	0	0	100	95-100	80-95	75-90	35-45	15-20
	48-58	Clay loam	CH, CL	A-6, A-7-6	0	0	100	95-100	80-100	75-95	35-55	15-30
	58-70 	Loam, silt loam	CL 	A-6 	0	0	100	95-100 	85-95	60-90 	25-35 	10-15

Table 14.--Engineering Index Properties--Continued

		!	Classif	ication	Fragi	ments		_	e passi	ng		
Map symbol	Depth	USDA texture				1 2 10		sieve n	umber		Liquid	
and soil name		   	   Unified 	   AASHTO 	>10  inches	3-10  inches	   4 	10	40	200	limit   	ticity index
   	In	   	   		Pct	Pct	   				Pct 	   
407:   Cinnadale	0-2	  Very channery   fine sandy   loam	  GC-GM, GM 	  A-1-b, A-2-4 	   0 	   0-10 	  40-60 	  35-55 	  25-45 	  15-30 	  15-25 	   1-7 
	2-9	1	  GC-GM, GM       	  A-1-b, A-2-4     	   0-5     	  10-30       	  40-60       	  35-55       	  25-45     	  15-30       	  15-25       	   1-7     
	9-15	-	GC-GM, GM	  A-1-b, A-2-4 	   0 	  10-30 	  40–60 	35-55 	25-45	  15-30 	15-25	   1-7 
ļ	15-20	Unweathered   bedrock	     	     	   	   	     	   		   		   
Heckly	0-3	Extremely   channery sandy   loam	•	  A-1, A-2-4 	0-10   	  10-25 	  20-40   	15-35	10-30	5-25	20-30	   5-10 
	3-15	Channery clay	  CH, CL, GC,   SC	  A-7-6 	   0 	   0 	  60–80 	  55-75 	  45-65 	40-60	  45-55 	  25–35 
İ	15-38	Very channery   silty clay   loam	GC	  A-2-7, A-7-6 	   0 	   0 	  45–65 	40-60	30-50	25-45	40-50	  15-25 
	38-40	Unweathered   bedrock	   	   	   	   	   					   
408:		 	 	 	 	 	l I	l I	l I	 		 
Mirabal	0-1	Slightly   decomposed	   	   	   	   	   					   
	1-2	plant material  Extremely   gravelly loamy   sand	GC-GM, GM	  A-1-a   	  15-30   	  15-30   	  15-35   	  10-30   	   5-25   	   5-15   	  15-20   	   1-4 
İ	2-6	Gravelly sandy   loam	GC-GM, SC-SM	A-2-4	0	5-10	65-85	40-50 	20-40	20-40	15-20 	4-7
	6-13	Very gravelly   sandy loam	GC-GM, SC-SM	A-1, A-2-4 	0-5 	5-15 	40-60 	35-55 	15-35 	5-25 	15-20 	4-7 
 	13-30	Extremely   gravelly sandy   loam		A-1-a, A-2-4   	10-25   	10-25   	15-35   	10-30   	5-25   	5-15   	15-20   	4-7   
İ	30-40	Unweathered   bedrock	   	   	     	     	   	   	   	   		   
Zuni  	0-1	Slightly   decomposed   plant material		   	   	   	   	   		   		   
	1-3	Gravelly sandy   loam		  A-1-b 	   0 	   0-5 	  55–75 	  50-70 	  15-35 	10-20	15-20	   1-7 
	3-18	Gravelly sandy   clay	  GC, SC 	  A-2-7, A-7-6 	   0 	   0-5 	  60–80 	  55-75 	40-60	30-50	50-65 	30-40
	18-27	Gravelly sandy   clay	  GC, SC 	  A-2-7, A-7-6 	   0 	   0 	  60–80 	  55-75 	40-60	30-50	50-65 	30-40
	27-40	Unweathered   bedrock	   	   	   	   	   	     	     	   		   

Table 14.--Engineering Index Properties--Continued

1   Clay loam 5   Clay 28   Clay 55   Clay 60   Weathered   bedrock     Unweathered   bedrock	Unified	AASHTO 	>10  inches     Pct   0   0   0   0   0	3-10 inches Pct 0 0 0	100 100	100	40 	70-90	     Pct 	ticity  index            10-25					
1  Clay loam 5  Clay 28  Clay 55  Clay 60  Weathered   bedrock    Unweathered	CH  CH	A-7-6  A-7-6	     0   0	0   0   0	100 100	100	80-100	70-90	      25–50	!					
5   Clay 28   Clay 55   Clay 60   Weathered   bedrock     Unweathered	CH  CH	A-7-6  A-7-6	0	0	100 100	100	80-100	70-90		!					
5   Clay 28   Clay 55   Clay 60   Weathered   bedrock     Unweathered	CH  CH	A-7-6  A-7-6	0	0	100 100	100	80-100	70-90		!					
28   Clay 55   Clay 60   Weathered   bedrock    Unweathered	CH	A-7-6	0	0	100				55-65						
55   Clay 60   Weathered   bedrock    Unweathered		'				T00			155 65	30-40					
60  Weathered   bedrock   Unweathered	CH       	A-7-6     	0   	0		400				30-40					
bedrock    Unweathered	   				100	100 	80-100	/5-95 	55-65	30-40 					
1															
1 2 0 2	CL, SC	A-6 	0-2	0-15	65-85	60-80 	50-70 	40-60 	30-40 	10-20 					
8   Silty clay loan	CH, CL	A-7-6	0	0-10	85-100	80-100	75-95	70-90	40-55	30-35					
15 Silty clay	CH	A-7-6	0	0-10	85-100	80-100	80-100	75-95	55-75	30-50					
27  Clay	CH	A-7-6	0	0-10	85-100	80-100	80-100	75-95	65-85	40-60					
	CH, GC	A-2-7, A-7-6	0	0-10	50-70	45–65 	40-60 	30-55 	55-75 	30-50 					
1 =			   				   	   	   	   					
1 2 0 2	GM 	  A-2-4 	   0 	0	40-55	  25-45 	  25-35 	  10-20 	  20-30 	   4-7 					
	lCI.	A-6. A-7-6	0	5-20	95-100	l   90–100	l 80-100	l 175-95	l 135–45	115-25					
			1 0	'			'	'		45-55					
	CH	A-7-6	0							45-55					
	1 .	A-7-6   	0-2   	5-15	80-100	75-95   	75-95   	70-90   	40-60   	20-40   					
		A-4	0	0	100		'	'		4-7					
1 -		1					'	'		4-7					
		1	1				'	'	!	20-30					
1 =			1				'	'		15-25					
clay loam		A-2-6, A-6	0		80-100	/5-95 	55-75	20-40	30-35	10-15 					
70   Sandy clay loan	n SC	A-6	0 	0	100	100 	75-95 	40-60 	30-35 	7-15 					
6 Loam	CL	A-6	0	0	100	100	80-100	60-80	25-30	10-15					
12 Loam	CL	A-6	0	0	100	100	80-100	60-80	30-35	10-15					
20  Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-55	20-30					
30  Clay loam	CL	A-6, A-7-6	0	0	100	100	80-100	70-90	35-45	15-20					
50   Sandy clay loan	CL, SC	A-6	0	0	95-100	90-100	65-85	35-55	30-40	10-15					
70   Very gravelly   sandy loam	GM 	A-1-a, A-1-b	0	0	30-40	15-25   	10-25   	5–15   	15-25   	1-4   					
i	i	ì	i												
Unweathered bedrock			 	 		 			 	 					
	loam   loam	loam	loam	loam	loam	loam	10am	loam	10am   Silty clay loam   CH, CL   A-7-6   0   0-10   85-100   80-100   75-95   70-90						

Table 14.--Engineering Index Properties--Continued

and soil name	In	   	Unified	!								i	
412:	In			AASHTO			3-10 inches	   4	10	40	200	limit 	ticity  index 
412:		i			   	Pct	Pct				   	Pct	 
		 			i					 	 		 
Rionutria	0-3	Very gravelly   loam	CL	A-2-6, A-	6   	10-25	15-30	45-65	40-65	34-60 	34-60	25-35	  10-15 
	3-12	Very cobbly   clay loam	GC, SC	A-2-7, A-	7-6   	5-15	30-50 	50-70 	45-65	35–50 	30-45 	40-50 	20-25 
	12-24	Very cobbly   clay loam	CL, GC, SC	A-7-6 		5-15	35–55 	70-90 	65-85	50-70 	40-60 	40-50 	20-25 
İ	24-40	Unweathered   bedrock			j I						   	 	   
Zaster	0-3	  Extremely   gravelly loam	GC-GM, GC	  A-1-a, A-1   A-2-4	1-b,     	10-20	  20-30 	  15-35 	10-30	  10-25 	  10-20 	20-30	   4-10 
į			CL, SC-SM	A-4	į	0-5	5-15		65-85		40-60		4-10
	11-27	Extremely gravelly loam	GC	A-1-b, A-	2-4	10-20	20-40	35-45	20-40	15-30	15-25	20-30	4-10
	27-40	gravelly loam  Unweathered   bedrock		 			 	 		   	   	   	   
413:		 			l		 	 			 		 
Morclay		  Silty clay  Clay	CH CH	A-7-6	į	0	0	100 100		85-100 80-100		55-75	35-50 35-50
i	5-48		CH	A-7-6	i	0	l 0	100		80-100			35-50
į	48-56	Clay	CH	A-7-6	i	0	0	100				55-75	35-50
	56-70 70-80	Clay  Weathered   bedrock	СН	A-7-6   		0	0	100 	100	80-100   	75–95   	55-75   	35-50   
414:		 			i						 		
Zunalei		Loamy fine sand		A-2-4, A-	4	0	0	100			20-40		1-4
		Fine sandy loam		A-4		0	0	100			40-60		4-7
ļ		Sandy clay loam  Fine sandy loam		A-6  A-4	ļ	0	0 1 0	100   100			45-65  40-60	15-25	10-20   4-7
		Fine sandy loam		A-4	į	0	0	100			40-60		4-7
Corzuni	0-1	  Slightly   decomposed		   						   	   	   	   
l I	1-8	plant material  Loamy fine sand	gw.	  A-2-4, A-4	л Л I	0	l l 0	   100	100	  65–85	  20-40	  10_15	   1-4
i i		Fine sandy loam		A-4	- I	0	l 0	100			40-60		1 4-7
į		Fine sandy loam		A-4	i	0	0	100			40-60		4-7
İ	45-70	Fine sandy loam	SC-SM	A-4	ĺ	0	0	100	100	70-90 	40-60	15-25	4-7
415:					i								
Tsoodzil		loam	GC, GC-GM	A-2-4, A-	į	0-5	30-50	İ		İ	30-50	İ	5-10
[			CL	A-6, A-7-	6	0						35-45	!
ļ			CH, CL	A-7-6	. !	0				75-95	'		20-40
Rubble Land	22-65 0	Clay 	CH, CL	A-7-6		0	U-10 	95-100 	90-100	80-100	/5-95 	45-65	20-40

Table 14.--Engineering Index Properties--Continued

   Map symbol	Depth	USDA texture	Classif	ication	Frag	ments		rcentage sieve n	e passi: umber	ng	  Liquid	   Plas-
and soil name		İ	İ	I	>10	3-10	İ				limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
   	In				Pct	Pct	   	   	   	   	Pct	   
416:										 		
Rock outcrop	0	Unweathered   bedrock	    -	 			   	   		===   		
  Bluesky	0-5	1	  SW-SM	  A-2-4	0	0	  90-100	  85-100	  65–85	  10-30	0-0	   NP
 	5-8 8-20	Fine sand  Unweathered   bedrock	SW-SM   	A-2-4   	0	0	90-100   	85-100   	65-85   	10-30   	0-0   	NP   
418:			 				 	 				
Asaayi    	0-1	Slightly   decomposed   plant material	   	   			   	   		   		   
	1-3	Very gravelly   fine sandy	'	A-2-4, A-4	0-5	0-10	70-90	  65–85 	  55-75 	  30–50 	15-20	4-7
	3-5	loam  Fine sandy loam	  SC	  A-4	0-5	0-10	  85–95	  70-90	  55-75	  30–50	  15-25	   7-10
ļ			CL	A-7-6	0	0	85-100	80-95	70-80	60-80	40-45	20-25
	16-20	Unweathered   bedrock	 					 				
Osoridge	0-2	  Very gravelly   clay loam	  SC 	  A-2-7, A-7-  	5   0-10	0-10	  50-70 	  45–65 	  35–55 	  30–50 	  45-55 	  25–35 
ļ		1 =		A-7-6	0	1	90-100		1	!	1	1
 		Clay  Unweathered   bedrock	CH   	A-7-6   	0	0	100   	100   	80-100   	75–95   	55-65   	35-40   
419:			 	 			 	 	 	 	 	 
Fortwingate	0-5	Very cobbly   loam	GC-GM, GC 	A-2-4, A-4	20-40	10-30 	70-90 	65–85 	35-55 	30-50 	20-25 	5-10 
ļ	5-13			A-7-6	0		90-100					
		Clay loam  Clay loam, clay		A-7-6  A-7-6	0   0		95-100  90-100			70-90  60-80		20-25
		Unweathered   bedrock					   	 	 	 		
  Cinnadale	0-6	  Extremely stony   sandy loam	  GC-GM, GM 	  A-1-b, A-2- 	1  25-40 	  25-40 	  35–55 	  30–50 	  20-40 	  10-30 	  10-25 	   1-7 
ļ	6-11	Very gravelly   fine sandy	GC-GM, GM	A-1-b, A-2-	1   0-5	10-30	  40–60 	  35–55 	25-45	  15–30 	10-25	   1-7 
	11-20	loam  Unweathered   bedrock	 	   			 	   		 		
Rock outcrop	0	Dedrock  Unweathered   bedrock	   	   			   	   	   	   	   	   
420:												
Seco	0-3 3-11			A-7-6  A-7-6	0   0	0   0	100   100		80-100  90-100			
	11-23	-	'	A-7-6	0	0	100		90-100			
į	23-58	Clay		A-7-6	0	0	100	100	90-100	80-100	65-75	45-55
	58-70	Clav	CH	A-7-6	1 0	1 0	100	100	90-100	180-100	65-75	45-55

Table 14.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classi	fication	-i	ments		rcentag sieve n	e passi umber	ng	  Liquid	
and soil name		   	   Unified 	AASHTO	>10  inches	3-10  inches	   4 	10	40	200	limit   	ticity index
	In		 	-	Pct	Pct	 	 			Pct	 
425:												
425:     Montillo	0-2	  Gravelly loam	  CL	  A-6	0-2	   0-10	  95–100	  80-100	  60-80	  50-70	  30-40	  10-20
į	2-8	1 -	CH	A-7-6	0		95-100			'	1	30-40
ļ		1 2 2	CL CH, GC, SC	A-7-6  A-7-6			70-90  60-80		1	1	!	20-30 40-50
 	10-33	clay	CH, GC, SC	A-7-0	0-10	33-33	00-00	55-75	50-70	40-00	03-73	40-30
İ	35-40	Unweathered   bedrock	   	 	 	   	   	   	   	   	   	   
Canoneros	0-2	Very cobbly   loam	  CL, GC, SC	A-6	0-10	0-40	  70–90	  65–85 	50-70	45-65	25-40	10-25
 	2-8		CH, CL	  A-7-6	1 0	0-10	  80-100	  75–95	  60–80	  50-70	  45-55	  25–35
į		Clay	CH	A-7-6	0	0-10	80-100	75-95	70-90	60-80	60-75	35-50
 	13-20	Unweathered   bedrock	 			 	 					
430:		 	 			 	 	 			 	 
Montillo	0-4 4-13		CL CH, CL	A-6  A-7-6	0-2		95-100  95-100					10-20  20-25
	13-31	1 -	CH  CH	A-6	0		90-100		'	'		20-25
į		1 2 2	CH	A-7-6	0	0-10	70-90	65-85	60-80	50-70	55-65	:
	38-40	Unweathered   bedrock	 			 	 	 			 	 
135:												
Tsoodzil	0-3	Very gravelly   loam	GC, GC-GM 	A-2-4, A-4	0-2	10-20 	50-70 	40-60 	35-55 	30-50 	25-35 	5-10 
Ï	3-11	1	CH, CL	A-7-6	0	0-10	90-100	85-100	75-95	70-90	45-55	20-30
	11-25		CH	A-7-6	0		90-100					
		1 2 2	CH, CL GC	A-7-6  A-2-6, A-2-7			85-100  25-45		'	'		
	32 03	gravelly clay										
Amcec	0-4	Extremely   gravelly loam	  GC 	A-1-a, A-2-4	0-2	  10-15 	  20-30 	  15-25 	15-25	13-20	  25–35 	5-10
i	4-16	!	  GC	A-2-6, A-6	0	5-15	40-60	35-55	25-45	25-45	25-35	10-15
		loam, very gravelly clay loam	   		 	 	 	 	   	   	 	 
	16-39	1	GM	A-1-a	0	5-15	20-30	15-25	15-25	13-20	20-30	1-4
I		gravelly coarse sandy	 			 	 	 			 	 
j		loam		j	İ	İ	İ	İ				
	39-53	1 2	GM	A-1-a	5-10	5-15	20-30	15-25	15-25	13-20	15-25	1-4
		gravelly loamy coarse sand	 			 	 	 			 	 
į	53-70	'	GM	A-1-a	10-30	10-30	20-30	15-25	15-25	13-20	15-25	1-4
		gravelly loamy coarse sand	 			 	 	 			 	
140:	0.0											
Chivato		1 -	CH  CH	A-7-6  A-7-6	0   0	0   0	100   100	100   100	'	'	50-60  60-75	
	13-40	1 -	CH	A-7-6	0	0	100	100	100	'	60-75	
į	40-52	Clay	CH	A-7-6	0	0	100	100	100	95-100	60-75	40-55
	52-65	Clay	CH	A-7-6	0	0	100	100	100	95-100	60-75	40-55

Table 14.--Engineering Index Properties--Continued

			Classif	ication	Fragi	nents	Per	rcentage	e passir	ng		
Map symbol	Depth	USDA texture	İ		İ			sieve n	mber		Liquid	Plas-
and soil name			   Unified	AASHTO	>10  inches	3-10 inches	4	10	40	200	limit 	ticity index
								ļ	ļ	ļ		
	In		 	 	Pct	Pct		 	 	 	Pct	 
525:	 		 	 	 			 	 	 	 	 
Silcat	0-2	Clay loam	CL	A-6, A-7-6	0	0	95-100	90-100	85-100	60-70	35-45	15-20
İ	2-38		CH	A-7-6	0	0	100	95-100	95-100	80-90	50-60	25-35
	38-65	Clay	CH, CL	A-7-6	0	0	100	95-100	95-100	85-95	45-60	25-35
550:		İ	 	 	 			 	 	 		 
Bryway	   0-2	Loam	  CL, CL-ML	  A-4, A-6	I I 0	l 0	90-100	  85-100	l   75-95	l  70-90	1  20-35	   5–15
<u> </u>		Clay, clay loam		A-7-6	0	0	100		75-95	'	•	15-30
İ	6-32	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-30
	32-40	Unweathered		!				ļ				
	l i	bedrock							 	 		
Galzuni	l   0-2	Loam	  CL	  A-6	I I 0	l 0	90-100	l l 85–100	l l 80–100	l  70-90	  25-35	l  10-15
		!	CH, CL	A-7-6	0	0	100		'	'	45-60	
j	4-23	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-60	20-30
			CL	A-6, A-7-6	0	0	100	100	80-100	70-90	35-45	15-20
			CL, SC	A-7-6	0	0	100		'	'	40-50	
	52-65	Sandy clay loam	SC	A-6	0	0	100	100	70-90 	40-50 	25-40	10-20
555:	 	 	[ 	 	 			 	 	 	 	 
Parkelei	0-3	Fine sandy loam	SC-SM	A-4	0	0	100	100	75-95	50-70	20-30	4-7
j	3-12	Clay loam	CL	A-6	0	0	100	100	70-90	65-85	35-40	15-20
		Sandy clay loam		A-6	0	0	100		70-90	'	•	15-20
	21-65	Sandy loam	SC-SM	A-4	0	0	100	100	70-90	50-70	20-30	4-7
Evpark	   0–3	  Fine sandy loam	  sc-sm	  A-4	l I 0	l     0	90-100	  85–100	l l 70-90	l 150-70	  20-30	l l 4-7
zvparn.		Clay loam, loam		A-6	0	0	100		80-100	'	•	15-20
j	16-20	Clay loam	CL	A-6	0	0	100	100	80-100	70-90	35-40	15-20
		Sandy clay loam		A-6	0	0	100		70-90	'	•	10-20
		Sandy clay loam	CL	A-6	0	0	100		70-90	!	30-40	10-20
	35-40	Unweathered   bedrock		 				 	 	 		
560:	 	 		 	 			 	 	 		 
Flugle	0-3	Fine sandy loam	  SC-SM	A-4	0	0	100	100	  45–65	  40-60	20-30	4-7
j	3-35	Sandy clay loam	SC	A-6	0	0	100	100	60-80	45-65	30-40	10-20
	35-65	Fine sandy loam	SC-SM	A-4	0	0	100	100	45-65	40-60	20-30	4-7
Teczuni	   0-2	Loam	  CL	  A-6	l I 0	l     0	100	  as 100	   70 90	  65 05	  25-35	  10 15
16024111		•	CL	A-6, A-7-6	l 0	l 0 1	100		'	'	35-45	
		! -	CL	A-7-6	0	0	100		'	'	40-45	
	33-65	Clay	CH, CL	A-7-6	0	0	100	100	80-100	75-95	45-55	20-30
561										 		
561: Flugle	   0–3	  Fine sandy loam	  sc-sm	  A-4	l l 0	l     0	100	   100	  45-65	l   40–60	  20-30	   4-7
i ragic		Sandy clay loam		A-6	1 0	0	100		60-80			10-20
	17-65	Fine sandy loam	SC-SM	A-4	0	0	100		45-65		1	4-7
Plumasano	   0-2	  Sandy loam	  SC-SM	  A-4	   0	   0	100	  a5_100	   65–85	   110_60	30-30	   4-7
riuliasafiO		! -	SC-SM  SC-SM	A-4  A-4	l 0	0     0		95-100			1	4-7
		! -	SC-SM	A-4	0	0		95-100	'	'	•	4-7
		Fine sandy loam		A-4	0	0		95-100	'	'	•	4-7
İ		Fine sandy loam		A-4	0	0		95-100	'	'	20-30	4-7
	53-65	Sandy clay loam	SC	A-6	0	0	100	95-100	45-65	40-60	30-40	10-15

Table 14.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments	Pe	rcentage	e passi	ng		
Map symbol	Depth	USDA texture					:	sieve n	umber		Liquid	Plas-
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct		 	 		Pct	
565:		 		 		 		 	 			 
Plumasano	0-3	Sandy loam	SC-SM	A-4	0	0	100	95-100	65-85	40-60	20-30	4-7
	3-24	Sandy loam	SC-SM	A-4	0	0	100	95-100	65-85	40-60	20-30	4-7
	24-36	Loamy sand	SM	A-2, A-4	0	0	100	95-100	60-80	30-50	10-20	1-4
	36-65	Fine sandy loam	SC-SM	A-4	0	0	100	95-100	65-85	40-60	20-30	4-7
Rock outcrop	0	  Unweathered   bedrock		   		   	   	   	   	   		   
566:		 		 		 	 	 	 			 
Bamac	0-2	Extremely   gravelly sandy	GC-GM	A-2-4 	0	0-10   	20-40 	  15–35   	  10-30 	5-25	15-25	4-7   
	2-8	Gravelly sandy	SC-SM, SM	A-2-4, A-4	0	0-10 	60-80 	  55–75 	  35–55 	20-45	  15-25 	  NP-7 
	8-30 	Extremely   gravelly   coarse sand	GW-GM, GM	  A-1-a 	0	   0-10 	25-45	20-40	  10-20 	5-15	0-0	NP 
	30-63		  GW-GM, GM 	  A-1-a 	0	  15-30 	  25-45 	  20-40 	10-20	5-15	0-0	NP 
575:				 		 	 	 	 			 
Ramah	0-3	Sandy loam	SC-SM	A-4	0	0	100	100	70-90	50-70	20-30	4-7
	3-8	Sandy clay loam	SC	A-6	0	0	100	100	70-90	40-50	30-40	10-15
	8-15	Clay loam	CL	A-7-6	0	0	100	100	75-95	65-85	40-45	15-20
	15-33	Clay loam	CL	A-6, A-7-6	0	0	100	100	75-95	65-85	35-45	15-20
	33-41	Clay loam	CL	A-6, A-7-6	0	0	100	100	75-95	65-85	35-45	15-20
	41-62	Sandy clay loam	CL, SC	A-6	0	0	100	100	45-65	40-60	30-35	10-15
Pescado	   0-3	  Fine sandy loam	  SC-SM	  A-2, A-4	0	   0	  90-100	  85-100	  70-90	30-50	20-30	   4-7
	3-10	Sandy clay loam	sc	A-6	0	0	95-100	90-100	70-90	40-60	30-40	10-20
	10-16	Clay loam	CL	A-6	0	0	95-100	90-100	60-80	50-70	35-40	15-20
	16-20	Unweathered   bedrock		 	 	 	   	 	   			   
	 	 	 	[ 	.	 	 	 	 	.	.	 

Table 15.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol	   Depth	Clay	Moist	Permea-	  Available	Linear	  Organic	Erosio	n facto	rs 	Wind  erodi-	1
and soil name			bulk   density	bility   (Ksat)	water   capacity	extensi- bility	matter	Kw	Kf	   T	bility  group	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				   	 
8:												
Water				 						-		
10:				l I								1
Tsosie	0-2	10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	2-7	10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.0-0.5	.28	.28	Ì	ĺ	İ
	7-13	10-25	1.25-1.35	0.60-2.00	0.19-0.21	0.0-2.9	0.0-0.5	.43	.43	Ì	İ	İ
	13-35	20-30	1.35-1.45	0.60-2.00	0.14-0.16	0.0-2.9	0.0-0.5	.32	.32	i	į	i
	35-47	27-35	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32	i	i	i
	47-65		1.35-1.45	0.60-2.00	0.16-0.18	0.0-2.9	0.0-0.5	.37	.37	į	į	į
Councelor	0-2	   10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	1 .28	   5	   3	   86
	2-20		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	1 .28	.28	-	-	
	20-47		1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.6	.24	.24	ì	i	i
	47-65		1.25-1.35	0.60-2.00	0.19-0.21	0.0-2.9	0.2-0.6	.43	.43		İ	
Blancot	   0-3	1 10 20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	10.5-0.9	1.28	1 .28	4	3	   86
Brancoc	3-11		1.40-1.50	0.20-0.60	0.10-0.11	3.0-5.9	0.5-0.9	1.32	1 .32	4	1 3	1 00
	11-16		1.40-1.50	0.60-2.00	0.07-0.08	0.0-2.9	0.5-0.9	1 .32	1.32	1	1	i
	16-37		1.45-1.55	2.00-6.00	0.06-0.07	0.0-2.9	0.2-0.6	.24	.24	1	1	i
	37-65		1.45-1.55		0.06-0.08	0.0-2.9	0.2-0.6	1 .17	1.17			
11:				 								1
Doakum	0-2	5-15	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.8-1.0	.28	.28	5	1 3	86
Dod rain	2-8		1.40-1.50	0.60-2.00	0.14-0.16	0.0-2.9	0.5-1.0	1.32	1.32			
	8-13		1.40-1.50	0.60-2.00	0.14-0.16	0.0-2.9	0.0-0.5	32	1.32	ì	i	i
	13-21		1.40-1.50	0.60-2.00	0.14-0.16	0.0-2.9	0.0-0.5	1.32	1.32	ì	i	i
	21-42		1.40-1.50	0.60-2.00	0.14-0.16	0.0-2.9	0.0-0.5	1.32	1.32	ì	i	i
	42-65		1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.0-0.3	.24	.24		İ	
Betonnie	   0-3	5 15	  1.55-1.65	2.00-6.00	0.11-0.13	0.0-2.9	11.0-2.0	.24	1.24	   5	3	   86
becomine	3-11		1.60-1.70	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	1 2	1 2	1 00
	11-21		1.55-1.65	2.00-6.00	0.11-0.13	0.0-2.9	0.0-0.5	1 .24	.24			1
	21-29		1.55-1.65		0.06-0.08	0.0-2.9	0.0-0.5	1 .17	1 .17			1
	29-45		1.55-1.65		0.06-0.08	0.0-2.9	0.0-0.5	1 .17	1 .17	1		i
	45-52		1.55-1.65	2.00-6.00	0.11-0.13	0.0-2.9	0.0-0.5	.24	1 .24	1		i
	52-60		1.60-1.70	2.00-6.00	0.11-0.13	0.0-2.9	0.0-0.5	.24	.24			
12:				 								
calladito	0-2	1 2_10	1.45-1.55	6.00-20.00	0.09-0.10	0.0-2.9	0.5-1.0	.20	.20	I I 5	1 2	1 134
Callagico	2-26		1.55-1.65	6.00-20.00		0.0-2.9	0.0-0.5	1 .17	1.17	ا ا	<del>'</del>	   T24
	26-65		1.45-1.55	6.00-20.00		0.0-2.9	0.0-0.5	.20	.20			
Elias	0-1	1 10 20	  1.50-1.60	2.00-6.00	  0.13-0.15		0.3-0.7	.28	1 .28	   5	3	   86
D1105	1-3		1.45-1.55	0.20-0.60	0.11-0.12		0.3-0.7	32	32	1 2	   2	1 00
	3-10		1.45-1.55	0.20-0.60	0.11-0.12		'	32	32	I	1	I I
	10-18		1.45-1.55	2.00-6.00		0.0-2.9	0.3-0.7	.32	.20	I	I	I
	10-18		1.55-1.65	0.20-0.60	0.07-0.08	0.0-2.9	0.2-0.5	32	32	I	I	I
	'				0.07-0.08		'		'	I	I	I
	33-65	30-40	1.55-1.65	0.06-0.20	0.10-0.11	3.0-5.9	0.2-0.5	.32	.32	1	1	1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs 	Wind  erodi-	
and soil name	   	   	bulk   density 	bility   (Ksat) 	water   capacity 	extensi- bility	matter   	   Kw	   Kf 	   T 	bility  group 	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
13:			 	 		 				 		
Councelor	- 0-2	10-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28	5	3	86
	2-15	10-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28	į	į	į
	15-19		1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.2-0.6	.37	.37	ļ		
	19-42		1.50-1.60  1.45-1.55	1	0.09-0.10	0.0-2.9	0.2-0.6	.20	.20			
	42-55   55-65	1	1.45-1.55	0.60-2.00	0.16-0.18  0.16-0.18	0.0-2.9	0.2-0.6	37	.37   .37			
Calladito	 -  0-3	2-10	  1.45-1.55	6.00-20.00	  0.09=0.10	0.0-2.9	  0.5-1.0	1.20	.20	   5	2	134
Callaulto	3-37		1.55-1.65	6.00-20.00		0.0-2.9	0.5-0.5	1 .17	1 .17		4	1 124
	37-65		1.45-1.55	6.00-20.00		0.0-2.9	0.5-0.5	.20	.20	į		į
14:			 	 		 						
Councelor	- 0-4	5-10	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28	5	3	86
	4-16		1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28			
	16-65 	5-20 	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28 	 		
Eslendo	- 0-2	18-27	1.20-1.30	0.60-2.00	0.16-0.18	0.0-2.9	0.2-0.6	.37	.37	2	5	56
	2-11		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.2-0.6	.37	.37			1
	11-20			0.00-0.20								
Calladito	- 0-3	2-10	1.45-1.55	6.00-20.00	0.09-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	3-41	2-10	1.55-1.65	6.00-20.00	0.06-0.08	0.0-2.9	0.5-0.5	.17	.17	ĺ	ĺ	İ
	41-65 	2-10	1.45-1.55	6.00-20.00	0.09-0.10	0.0-2.9	0.5-0.5	.20	.20			
16:	İ	İ				İ						į
Starlake	- 0-3		1.35-1.45	0.06-0.20	0.11-0.12	6.0-8.9	0.6-1.0	.20	.20	5	4	86
	3-12 12-20		1.30-1.40  1.30-1.40	0.01-0.06	0.11-0.12	6.0-8.9   3.0-5.9	0.6-1.0  0.6-1.0	.20	.20 .32	 		
	20-54		1.30-1.40	0.06-0.06	0.07-0.08	6.0-8.9	0.6-1.0	1 .20	.20	İ	İ	
	54-65		1.30-1.40	0.20-0.60	0.07-0.08	3.0-5.9	0.6-1.0	.32	.32	į		į
22:			 	 		 				 		
Querencia	- 0-2	10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	2-9		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			-
	9-15		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
	15-65	28-35	1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	32	32	 		
Lavodnas	-   0-3		1.25-1.35	0.60-2.00	0.12-0.14	0.0-2.9	0.5-0.9	.37	.37	2	4L	86
	3-9		1.25-1.35	0.20-0.60	0.14-0.16	3.0-5.9	0.5-0.9	.32	.32			
	9-13	40-50	1.45-1.55	0.06-0.06	0.11-0.12	6.0-8.9	0.5-0.9	.20	20			
30:				 								
30: Orlie	 -  0-2	10-20	1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	   5	3	86
	2-5	15-27	1.15-1.25	2.00-6.00	0.16-0.18	0.0-2.9	0.2-1.0	.37	.37	į	į	į
	5-15		1.35-1.45	1	0.19-0.21		0.2-1.0	.32	.32			1
	15-36		1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32			
	36-50 50-62		1.35-1.45  1.45-1.55	0.20-0.60	0.19-0.21  0.19-0.21	3.0-5.9	0.2-1.0	37	37			
Tinian	-  0-3	1 10 20	1.30-1.40	1 0 60 2 00	 		10510	.55		2	3	   86
111111111	-  0-3   3-8		1.30-1.40	0.60-2.00	0.19-0.21 0.19-0.21		0.5-1.0	32	.55	<sup>2</sup>	] 3 ]	gp
	8-19		1.25-1.35		0.19-0.21		0.5-1.0	.20	.20	İ		Ì
	19-24	27-35	1.30-1.40	0.20-0.60	0.19-0.21		0.5-1.0	.32	.32	İ	İ	İ
	24-40		l	0.00-0.20						1	1	1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	Wind  erodi-
and soil name		 	bulk   density	bility (Ksat)	water   capacity	extensi-   bility	matter	Kw	   Kf	   T	bility  group	bility  index
	-    In	Pct	g/cc	In/hr	In/in	Pct	Pct	- I ————— 				- I 
40:						 						
Nuffel	0-2		1.20-1.30	0.60-2.00	0.19-0.21	0.0-2.9	0.5-1.0	.43	.43	5	4L	86
	2-12		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
	12-18		1.20-1.30	0.60-2.00	0.19-0.21	0.0-2.9	0.5-1.0	.43	.43			
	18-26   26-65		1.35-1.45  1.20-1.30	0.20-0.60	0.19-0.21  0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
40.	į		į	į	į	į	į	į	į	į	į	į
42: Suwanee	 -  0-4	30-40	1.20-1.30	0.20-0.60	0.19-0.21	3.0-5.9	11.0-2.0	1 .32	1.32	l l 5	   4L	   86
	4-34		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32	i	i	
	34-48	18-25	1.20-1.30	0.60-2.00	0.19-0.21	0.0-2.9	0.2-1.0	.43	.43	İ	İ	İ
	48-65	30-35	1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32		İ	
44:						 						
Suwanee	- i 0-10	40-55	1.30-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20	5	4	86
	10-17	40-55	1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9	0.2-1.0	.20	.20			
	17-30		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32			
	30-47		1.35-1.45	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32			
	47-65 	10-20 	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-1.0	.24	.24			
45:			İ		Ì		İ				İ	
Nutreeah	-  0-10	30-40	1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	2.0-3.0	.32	.32	5	4	86
	10-16		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32			
	16-24	1	1.35-1.45	0.06-0.20	0.14-0.16	3.0-5.9	0.2-1.0	.20	.20			
	24-40		1.30-1.40	0.01-0.06	0.14-0.16	6.0-8.9	0.2-1.0	.20	.20			
	40-65 	40-60	1.30-1.40	0.01-0.06	0.14-0.16	6.0-8.9 	0.2-1.0	1.20	1.20		 	
47:	İ				İ	İ			İ	İ	İ	
Conchovar	- 0-3	35-40	1.30-1.40	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	5	4L	86
	3-9		1.30-1.40	0.01-0.06	0.14-0.16	6.0-8.9	1.0-2.0	.20	.20			
	9-26		1.30-1.40	0.01-0.06	0.10-0.12	6.0-8.9	0.2-1.0	.20	.20	!		
	26-36		1.30-1.40	0.01-0.06	0.10-0.12	6.0-8.9	0.2-1.0	.20	.20			
	36-54 54-65		1.30-1.40  1.30-1.40	0.01-0.06	0.14-0.16	6.0-8.9	0.2-1.0	1.32	.20		 	
										İ	İ	
49: Concho	 -  0-4	30 40	1.25-1.35	   0.20-0.60	0.19-0.21	   3.0-5.9		.32	1.32	   5	1 4	   86
Concho	4-28	1	1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	11.0-2.0	1.32	1 .32		**	1 00
	28-38		1.30-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.24	i		
	38-65		1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32	İ	İ	
51:				 		 						
Kwakina	-  0-7	5-12	1.35-1.45	6.00-20.00	0.09-0.10	0.0-2.9	0.5-1.0	.20	.20	4	2	134
	7-11		1.50-1.60	6.00-20.00		0.0-2.9	0.5-1.0	.20	.20	i	i -	
	11-23		1.35-1.45	6.00-20.00		0.0-2.9	0.5-1.0	1.17	1.17	i	İ	i
	23-33		1.35-1.45	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	į	į	į
	33-65		1.35-1.45	6.00-20.00	0.09-0.10	0.0-2.9	0.5-1.0	.20	.20			[
52:				 	1	I I			 			
Zuniven	- 0-12	5-10	1.15-1.25	6.00-20.00	0.09-0.10	0.0-2.9	0.5-2.0	.20	.20	5	2	134
	12-42		1.20-1.30		0.19-0.21	0.0-2.9	0.5-2.0	.43	.43	i	İ	i
	42-65		1.15-1.25	6.00-20.00		0.0-2.9	0.5-2.0	.20	.20	İ	İ	İ

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	Wind  erodi-
and soil name	     	 	bulk density	bility (Ksat)	water   capacity	extensi-   bility	matter	   Kw	   Kf	   T 	bility  group	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
53:	 			 								
Hawaikuh	0-10		11.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32	5	4L	86
	10-24 24-32		1.45-1.55  1.45-1.55	0.20-0.60	0.15-0.17	6.0-8.9	0.2-1.0	32	32	 	l I	
	32-42		1.45-1.55	0.20-0.60	0.19-0.21	3.0-8.9	0.2-1.0	1 .32	1.32			
	42-65	1	1.50-1.60	0.06-0.20	0.14-0.16	6.0-8.9	0.2-1.0	.20	.20			
54:	 		 	 		 						
Venadito	0-5	55-70	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	1.0-3.0	.20	.20	5	4	86
	5-29	60-70	1.20-1.30	0.00-0.06	0.10-0.12	6.0-8.9	0.5-1.0	.20	.20			
	29-40		1.25-1.35	0.20-0.60	0.11-0.13	6.0-8.9	0.5-1.0	.32	.32			
	40-65 	60-70 	1.20-1.30	0.00-0.06	0.07-0.08	6.0-8.9	0.5-1.0	.20	.20			
55:			ĺ		İ							
Sparham	0-2	35-40	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	5	4	86
	2-14		1.30-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	14-18		1.40-1.50	0.20-2.00	0.14-0.21		0.5-1.0	.32	.32			
	18-27   27-31	1	1.30-1.40  1.40-1.50	0.06-0.20	0.14-0.17	6.0-8.9   3.0-5.9	0.5-1.0	.20	.20			
	31-65		1.30-1.40	0.00-2.00	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
60:	 			 								
Redpen	0-4	20-25	1.30-1.40	0.60-2.00	0.14-0.16	0.0-2.9	1.0-2.0	.32	.32	5	1 5	56
-	4-24		1.30-1.40	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32	İ	İ	i
	24-52	27-35	1.30-1.40	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32	İ	ĺ	İ
	52-65	27-35	1.30-1.40	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
100:												
Norkiki	0-3	5-10	1.60-1.70	6.00-20.00	0.06-0.08	0.0-2.9	0.2-0.5	.17	.17	2	2	134
	3-13		1.25-1.35	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.5	.32	.32			
	13-19		1.50-1.60	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.5	.24	.24		ļ	!
	19-28   28-40	20-35	1.25-1.35	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.5	32	32			
			<u> </u>							į		İ
Kimnoli	0-2 2-7		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28	1	3	86
	2-7   7-14		1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.0-0.5	32	37	1	1	
	14-20			0.00-0.20						İ		
110:	 		 	 								
Benally	l   0-2	10-20	1.45-1.55	2.00-6.00	0.12-0.14	0.0-2.9	0.3-0.8	1 .28	1 .28	I I 5	1 3	l l 86
	2-9	1	1.45-1.55		0.13-0.15	1	0.2-0.5	.32	.32	i		
	9-25	1	1.50-1.60	0.20-0.60	0.13-0.15	3.0-5.9	0.2-0.5	.32	.32	į	į	į
	25-65	20-35	1.50-1.60	0.60-2.00	0.13-0.15	3.0-5.9	0.0-0.2	.32	.32			
Fruitland	   0-3	5-10	1.40-1.55	6.00-20.00	0.09-0.11	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	3-10	5-10	1.40-1.55	6.00-20.00	0.09-0.11	0.0-2.9	0.0-0.5	.20	.20			
	10-19		1.40-1.55	6.00-20.00		0.0-2.9	0.0-0.5	.20	.20			[
	19-29		1.40-1.55	6.00-20.00		0.0-2.9	0.0-0.5	.20	.20	1		
	29-65	10-15	1.35-1.50	2.00-6.00	0.11-0.13	0.0-2.9	0.0-0.5	.28	.28			1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	- 1	Wind  erodi-
and soil name	   	   	bulk   density 	bility   (Ksat) 	water   capacity 	extensi- bility	matter   	   Kw 	   Kf 	   T 	bility  group 	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
444									ļ			
111:		1 10 00	1 45 1 55		10 12 0 15		10 5 1 0					1 06
Yelives	0-2 2-12	,	1.45-1.55		0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	12-30	,	1.45-1.55  1.35-1.45	'	0.13-0.15  0.16-0.18	0.0-2.9	0.0-0.5	.28   .37	37			
	30-41	,	1.55-1.65	6.00-20.00		0.0-2.9	0.0-0.5	1 .20	1 .20	1		
	41-56	,	1.55-1.65	'	0.09-0.11	0.0-2.9	0.0-0.5	1 .20	1 .20			
	56-80		1.55-1.65	6.00-20.00	1	0.0-2.9	0.0-0.5	1 .20	1 .20			i
										İ	İ	i
115:	j	į	İ	İ	İ	j	j	į	İ	İ	İ	j
Razito	0-4	,	1.45-1.65	6.00-20.00		0.0-2.9	0.1-0.5	.17	17	5	2	134
	4-34	,	1.45-1.65		0.06-0.08	0.0-2.9	0.1-0.5	.17	.17			
	34-65	5-10	1.45-1.65	6.00-20.00	0.06-0.08	0.0-2.9	0.1-0.5	.17	.17			
Shiprock	l l 0–3	l l 5–15	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-0.6	1 .28	1 .28	l I 5	l l 3	l l 86
<u>-</u>	3-15	,	1.50-1.60		0.13-0.15	0.0-2.9	0.1-0.2	.28	1 .28	-		
	15-37	,	1.50-1.60		0.13-0.15	0.0-2.9	0.1-0.2	.28	.28	i	i	i
	37-60	,	1.50-1.60	'	0.13-0.15	0.0-2.9	0.1-0.2	.28	.28	i	İ	i
116:	İ	İ	İ	İ	İ	İ	į	İ	į	i	į	i
Fajada	0-2	20-30	1.50-1.55	0.60-2.00	0.11-0.12	0.0-2.9	0.5-1.0	.15	.32	3	6	48
	2-6	30-40	1.50-1.60	0.06-0.20	0.07-0.10	3.0-5.9	0.2-0.8	.32	.32			
	6-12	20-35	1.65-1.75	0.20-0.60	0.06-0.08	3.0-5.9	0.2-0.8	.32	.32			
	12-16	27-35	1.75-1.85	0.20-0.60	0.06-0.08	3.0-5.9	0.2-0.8	.32	.32			
	16-28	27-35	1.65-1.75	0.20-0.60	0.06-0.10	3.0-5.9	0.1-0.5	.32	.32			
	28-40			0.00-0.20								
Huerfano	   0-2	   15_27	1.25-1.35	   0.20-0.60	0.10-0.12	0.0-2.9	10.2-0.6	1 .28	1.37	2	l l 5	   56
inder rano	2-17		1.55-1.65	0.06-0.20	0.08-0.10	3.0-5.9	0.2-0.6	1 .28	1.32	2	1	1 30
	17-20			0.00-0.20						İ	İ	
	ĺ	İ	İ	İ	İ	ĺ		İ	ĺ	ĺ	İ	İ
Benally	0-2		1.25-1.35	0.20-0.60	0.10-0.12	0.0-2.9	0.5-0.8	.32	.32	4	5	56
	2-18		1.50-1.60	0.20-0.60	0.07-0.08	3.0-5.9	0.2-0.5	.32	.32	!		
	18-45	1	1.50-1.60	0.20-0.60	0.07-0.08	3.0-5.9	0.2-0.5	.32	.32	!		
	45-55			0.00-0.20								
118:				 						İ		
Farb	0-2	5-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.6	.24	.24	1	3	86
	2-9	5-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.6	.24	.24			
	9-20			0.20-2.00								
Chipeta	   0-2	   40_47	11.15-1.25	   0.06-0.20	0.11-0.16	3.0-5.9	10.5-2.0	1 .43	1.43	2	   4	   86
Chipeed	2-12		11.15-1.25	0.06-0.20	0.11-0.16	3.0-5.9	0.0-0.5	1 .43	1 .43	-	*	1
	12-20			0.00-0.06						İ	İ	
				!								
Rock outcrop	0			0.00-0.20						-		
120:	 	 		 		 			 			
Doak	0-2	10-15	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.6	.28	.28	5	3	86
	2-8	,	1.45-1.55		0.14-0.16	3.0-5.9	0.2-0.6	.32	.32	i	İ	i
	8-12	,	1.45-1.55	'	0.14-0.16	3.0-5.9	0.2-0.6	.32	.32	İ	İ	İ
	12-40	20-30	1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.6	.32	.32			
	40-65	10-20	1.50-1.60	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.6	.24	.24	[	ļ	1
Chinragh			11 45 1 55	1 6 00 00 00	10 00 0 10			1 20	1 20			124
Shiprock	0-4	,	1.45-1.55  1.50-1.60	6.00-20.00   2.00-6.00	0.13-0.15	0.0-2.9	0.2-0.3	.20   .28	20	5	2	134
	4-18   18-37		1.50-1.60		0.13-0.15	0.0-2.9	0.1-0.2	.28	1 .28	1	1	1
	37-65	1	1.50-1.60	2.00-6.00		0.0-2.9	0.1-0.2	.28	.28		1	I
	5, 65	1 2 13	1 20 1-00	2.00 20.00	10.10 0.10	0.0 2.7		-20	.20			
	1	1	1		1	1	1	1	1	1	1	1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	Depth	   Clay	Moist	Permea-	Available	Linear	  Organic	Erosio	n facto	rs 	Wind  erodi-	Wind  erodi-
and soil name	   	   	bulk   density 	bility   (Ksat) 	water   capacity	extensi- bility	matter 	   Kw 	   Kf 	   T 	bility  group 	bility  index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
121:	 		 			 						
Badland	0-2	50-60	1.15-1.30	0.01-0.06	0.00-0.12	6.0-8.9	0.0-0.0	.20	.20	1	4	86
122:	 		 			 				 		
Farb	0-2 2-5 5-20	,	1.50-1.60  1.50-1.60 	2.00-6.00   2.00-6.00   0.00-0.20	0.07-0.08  0.10-0.12 	0.0-2.9	0.2-0.6	10 .10 .24	.24	1   	4L 	86   
Rock outcrop	   0	 		0.00-0.06		 				-		
125:												
Sanfeco	0-2	10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	2-10		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32		ļ	1
	10-27   27-35		1.40-1.50  1.50-1.60	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0  0.5-1.0	.20	.20	 	1	
	35-39		1.40-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	32	32		l I	
	39-65		1.50-1.70		0.06-0.08	0.0-2.9	0.5-1.0	.15	.15	į	İ	į
130:	 	 	 			 				 		
Chipeta	0-3	20-27	1.25-1.35	0.60-2.00	0.19-0.21	3.0-5.9	0.0-0.5	.15	.43	1	6	48
	3-6	1	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-1.2	.20	.20		!	1
	6-14   14-20			0.06-0.06		 				 		1
		İ				İ			İ	İ	İ	į
Badlands	0-2		1.15-1.30  1.15-1.30	0.01-0.06	0.00-0.12 0.00-0.12	6.0-8.9	0.0-0.0	20	.20	1	4	86
	2-20	50-60	11.13-1.30	0.01-0.06	0.00-0.12	0.0-0.9		.20	.20		l I	
Moncisco	0-3	20-25	1.20-1.30	0.60-2.00	0.04-0.06	3.0-5.9	0.0-1.0	.05	.32	2	8	0
	3-13		1.20-1.30	0.60-2.00	0.02-0.04	0.0-2.9	0.0-0.5	.05	.24		ļ	
	13-27   27-39		1.45-1.55  1.45-1.55		0.00-0.00	0.0-0.0	0.0-0.0	.02	.02			
	39-59	1	1.45-1.55	6.00-20.00		0.0-0.0	0.0-0.0	.02	.02			
150:												
Riverwash	   0-10	0-3	1.40-1.70	20.00-20.00	0.01-0.02	0.0-2.9	0.0-0.1	1 .10	.02	l I 5	   8	1 0
	10-80		1.40-1.70	20.00-20.00	0.01-0.02	0.0-2.9	0.0-0.1	.10	.02	į		į
Escawetter	   0-2	3-6	1.45-1.55	6.00-20.00	0.09-0.11	0.0-2.9	0.0-0.5	.20	1.20	   5	1 1	310
Dodwood	2-8	1	1.45-1.55	6.00-20.03		0.0-2.9	0.0-0.5	.20	.20		-	310
	8-25	2-4	1.45-1.55	6.00-20.03	0.05-0.07	0.0-2.9	0.0-0.5	.17	.17	İ	Ì	İ
	25-32	1	1.45-1.55	6.00-20.03	1	0.0-2.9	0.0-0.5	.20	.20			
	32-48 48-65		1.45-1.55  1.45-1.55		0.05-0.07		0.0-0.5	.17	.17	 		
4.50	į	į	į		į	į	į	į	į	į	į	į
160: Escawetter	   0-1	   1-5	  1 45_1 55	6.00-20.00	10 06-0 08	   0 0-2 9	0.0-0.5	1 .20	1.20	   5	1 1	310
LDGGWCCCCI	1-7		'	6.00-20.00			0.0-0.5		20		-	1 210
	7-16	1-5	1.45-1.55	6.00-20.00	0.05-0.07	0.0-2.9	0.0-0.5		.17	į	İ	į
	16-22			6.00-20.00			0.0-0.5		1.17		ļ	
	22-52 52-70			6.00-20.00		•	0.0-0.5		1.17			
	32 - 70	+-2	11.40-1.00	0.00-20.00		0.0-2.9		•±/	• • • /			
Riverwash	0-80	1-3	1.45-1.55	20.00-20.00	0.01-0.02	0.0-1.9	0.0-1.0	.17	.17	5	1	310
	1	1	!	!			ļ.	ļ.	!	!	1	!
Razito	0-1	0-5	11.45-1.55	6.00-20.00	10.05-0.07	0.0-2.9	0.0-0.1	.17	.17	5	2	134

Table 15.--Physical Properties of the Soils--Continued

Map symbol	Depth	Clay	Moist	Permea-	Available	Linear	  Organic	Erosio	n tacto	rs 	Wind  erodi-	
and soil name		   	bulk   density 	bility   (Ksat) 	water   capacity	extensi- bility	matter 	   Kw 	   Kf 	   T 	bility  group 	bility  index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
205:				 		 						
Penistaja	0-3		1.40-1.50	2.00-6.00	0.11-0.13	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	3-19   19-65		1.45-1.55  1.45-1.55	0.60-2.00	0.14-0.16  0.11-0.16	0.0-2.9	0.5-1.0	32	32			
Tintero	   0-4	   5_15	  1.45-1.55	   2.00-6.00	0.13-0.15	0.0-2.9	  0.5-1.0	.28	.28	   5	3	   86
11110010	4-16		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28			
	16-48		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	ĺ	İ	İ
	48–65 	2-10	1.45-1.55	6.00-20.00 	0.09-0.10	0.0-2.9	0.5-1.0 	.20	.20			
08:		į	į		į	į	į			į	į	į
Marianolake	0-2		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	2-8		1.35-1.45  1.35-1.45	0.60-2.00	0.16-0.18	3.0-5.9	0.0-0.5	37	37	 	1	l I
	14-24		1.45-1.55	2.00-6.00	0.13-0.21	3.0-5.9	0.0-0.5	1 .28	.28	İ		
	24-39		1.45-1.55	2.00-6.00	0.13-0.15	3.0-5.9	0.0-0.5	.28	.28	İ	i	İ
	39-70	5-15	1.55-1.65	6.00-20.00	0.09-0.10	0.0-2.9	0.0-0.5	.20	.20	į	į	į
210:				 		 						
Marianolake	0-5		1.35-1.45	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	5-11		1.50-1.60	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	11-47   47-65		1.55-1.65  1.60-1.70	0.20-0.60	0.19-0.21 0.13-0.15	3.0-5.9	0.5-1.0	32	32			
Skyvillage	   0-2	   5_15	  1.35-1.45	2.00-6.00	0.07-0.09	0.0-2.9	  0.5-1.0	.15	.24	   1	4	   86
bkyviiiage	2-5		1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.6	.24	.24	+	-	1
	5-9		1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.6	.32	.32	i	i	İ
	9-15	20-25	1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.6	.32	.32	İ	İ	İ
	15-20			0.20-2.00								
212:		İ		 							İ	
Rehobeth	0-2		1.25-1.35	0.20-0.60	0.18-0.20	6.0-8.9	0.5-1.0	.37	.37	5	4L	86
	2-5		1.25-1.35	0.20-0.60	0.18-0.20	6.0-8.9	0.5-1.0	.37	.37			
	5-12 12-18		1.40-1.50  1.40-1.50	0.06-0.20	0.13-0.15	6.0-8.9	0.5-1.0	20	20	 		
	18-32		1.40-1.50	0.06-0.20	0.13-0.15	6.0-8.9	0.2-0.5	1 .20	1 .20	l I		İ
	32-80		1.40-1.50	0.06-0.20	0.13-0.15	6.0-8.9	0.2-0.5	.20	.20	İ	ļ	
215:				 		 						
Viuda	0-3	10-20	1.30-1.40	2.00-6.00	0.07-0.09	0.0-2.9	0.5-0.9	.10	.37	1	6	48
	3-15		1.40-1.45	0.06-0.20	0.14-0.17	6.0-8.9	0.0-0.0	.20	.20		!	
	15-17   17-20	20-35	1.45-1.50	0.60-2.00	0.15-0.17	3.0-5.9	0.0-0.0	.15	32			
Donigtoio	j	1 10 20	11 40 1 50	İ	10 11 0 12				.24	     5		     86
Penistaja	0-2   2-22		1.40-1.50  1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	1.0-2.0  0.5-1.0	.24	32	l p	3	l gp
	22-65		1.45-1.55	0.60-6.00	0.11-0.16	3.0-5.9	0.5-1.0		.32			
Rock outcrop	0			0.00-0.20						-		
220:	l I			 		[ [						
Hagerwest	0-2	10-20	1.20-1.25	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	2	3	86
	2-13		1.35-1.45	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.8	.32	.32			
	13-19		1.35-1.45	0.60-6.00	0.14-0.16	3.0-5.9	0.2-0.8		.32			
	19-35   35-40	10-20 	1.50-1.60	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.8	.24	.24			
	1 23-40		 	0.00-0.20 						l I	1	I I

Table 15.--Physical Properties of the Soils--Continued

Map symbol	Depth	   Clay	Moist	Permea-	  Available	Linear	  Organic	Erosio	n facto	rs 	Wind  erodi-	Wind  erodi-
and soil name	   	   	bulk   density 	bility   (Ksat) 	water   capacity	extensi- bility	matter 	   Kw 	   Kf 	   T 	bility  group	bility  index
	In 	Pct	g/cc	In/hr	In/in	Pct	Pct	   				
220:												
Bond	0-2		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	1	3	86
	2-5	:	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-0.9	.28	.28			
	5-14   14-20	20-30	1.45-1.55	0.60-2.00	0.13-0.15	0.0-2.9	0.5-0.9	.32	.32			
225:			 	 		 		 	 			
Aquima	0-2	10-27	1.25-1.35	0.60-2.00	0.19-0.21	0.0-2.9	0.5-1.0	.43	.43	5	4L	86
	2-11	10-27	1.40-1.60	0.20-2.00	0.14-0.21	0.0-2.9	0.1-0.9	.43	.43	İ	į	į
	11-17	20-30	1.30-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.1-0.9	.32	.32			
	17-45	18-35	1.20-1.40	0.20-2.00	0.19-0.21	3.0-5.9	0.1-0.9	.43	.43			
	49-65 	30-40	1.20-1.30	0.20-2.00	0.12-0.18	3.0-5.9	0.1-0.9	.15 	.32			
Hawaikuh	0-3	10-27	1.20-1.30	0.60-2.00	0.19-0.21	0.0-2.9	0.5-1.0	.43	.43	5	6	48
	3-12		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.37	.37			
	12-29		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32		ļ	
	29-39		1.40-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32			
	39-54 54-65	:	1.45-1.55  1.30-1.40	2.00-6.00	0.11-0.13	0.0-2.9	0.2-1.0	.24	.24			
230:	 			 		 						
Sparank	l   0-2	1 1 30-40	1.35-1.45	   0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.37	.37	5	4	86
	2-25		1.35-1.45	0.06-0.60	0.14-0.21	6.0-8.9	0.5-1.0	.20	.20	-	-	
	25-65		1.35-1.45	0.01-0.06	0.14-0.17	6.0-8.9	0.5-1.0	.20	.20			į
San Mateo	   0-2	27-40	1.20-1.30	   0.20-0.60	0.19-0.21	   3.0-5.9	1.0-2.0	.32	.32	5	4	86
	2-15	27-40	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
	15-30	20-30	1.35-1.45	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	30-39		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
	39-45 45-65		1.40-1.50  1.35-1.45	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0  0.5-1.0	.24	.24			
	İ	İ	İ	İ	į	į	j	į	į	į _		
Zia	0-3		1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	3-12 12-20		1.45-1.55  1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0  0.5-1.0	.28 .28	.28 .28			
	20-28		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.24	.24	 	 	
	28-70	:	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28			
235:	 			 		 		 	 			
Notal	0-1	20-27	1.35-1.45	0.60-2.00	0.15-0.17	0.0-2.9	0.5-2.0	.37	.37	5	6	48
	1-3	30-40	1.35-1.45	0.20-0.60	0.17-0.19	3.0-5.9	0.5-2.0	.32	.32	İ	İ	j
	3-13	20-35	1.35-1.45	0.20-0.60	0.13-0.14	0.0-2.9	0.5-2.0	.32	.32			
	13-27		1.35-1.45		0.17-0.19	3.0-5.9	0.5-2.0		.32			
	27-44 44-65		1.25-1.35  1.35-1.45	0.01-0.06	0.14-0.15 0.13-0.14	6.0-8.9   0.0-2.9	0.5-2.0  0.5-2.0	.24	.24			
	ĺ	İ	İ	İ	İ	į	į	į	į			
Hamburn	0-3		1.25-1.35		0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	5	4	86
	3-8   8-29		1.25-1.35  1.25-1.35		0.19-0.21	3.0-5.9	0.2-0.5	32	32		 	
	8-29   29-52		1.25-1.35		0.14-0.16	3.0-5.9	0.2-0.5	32	32			
	52-70		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.2-0.5	32	32			
		İ						İ	İ	i	İ	i

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	
and soil name	   		bulk   density	bility   (Ksat)	water   capacity	extensi- bility	matter	   Kw	   Kf	   T	bility  group	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
240:												
Breadsprings	0-3	l l 15–25	1.35-1.45	0.60-2.00	0.16-0.18	0.0-2.9	0.2-0.5	1 .37	1 .37	I I 5	   4L	l l 86
Dicadopinigo	3-7	•	1.35-1.45	0.60-2.00	0.16-0.18	3.0-5.9	0.2-0.5	1.37	37			00
	7-14	•	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.2-0.5	.32	.32	i	İ	i
	14-22	10-19	1.45-1.55	2.00-6.00	0.14-0.16	0.0-2.9	0.2-0.5	.28	.28	i	į	į
	22-29	15-25	1.25-1.35	0.60-2.00	0.15-0.17	0.0-2.9	0.2-0.5	.43	.43			
	29-36	,	1.35-1.45	0.60-2.00	0.16-0.18	3.0-5.9	0.2-0.5	.37	.37			
	36-70	15-25	1.25-1.35	0.60-2.00	0.15-0.17	0.0-2.9	0.2-0.5	.43	.43			
Nahodish	0-1	15-25	1.25-1.35	0.60-2.00	0.19-0.21	0.0-2.9	0.5-1.0	.43	.43	I I 5	   4L	l l 86
	1-9	•	1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.24	.37	i	i	i
	9-17	40-55	1.25-1.35	0.06-0.20	0.15-0.17	3.0-5.9	0.2-0.5	.24	.24	İ	İ	İ
	17-31	40-55	1.25-1.35	0.06-0.20	0.15-0.17	3.0-5.9	0.2-0.5	.24	.24			
	31-36	•	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.2-0.5	.32	.20			
	36-58	•	1.25-1.35	0.60-2.00	0.19-0.21	0.0-2.9	0.2-0.5	.43	.43			
	58-80	40-50	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.2-0.5	.20	.20			
241:						 						
Mentmore	0-1	18-25	1.35-1.45	0.60-2.00	0.16-0.18	3.0-5.9	0.5-1.0	.37	.37	5	5	56
	1-2	28-35	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32	İ	İ	Ì
	2-7	25-35	1.35-1.45	0.60-2.00	0.14-0.16	3.0-5.9	0.0-0.5	.32	.32			
	7-13	•	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32			
	13-22	•	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32			ļ
	22-70	28-35 	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32			
242:		İ						İ	İ		İ	
Gish	0-3	30-35	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32	5		
	3-13	40-50	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20			
	13-27		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20			
	27-55		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20	!	ļ	
	55-64		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32			
	64-70 	40-50	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9 	0.0-0.5	1.20	.20		1	
Mentmore	0-2	14-19	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.0-0.5	.28	.28	5		
	2-4	30-40	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32			
	4-13	30-35	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32			
	13-24		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32	ļ		
	24-44		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32	!	ļ	
	44-62		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	32	32			1
	62-70 	30-35	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	.32		1	
244:		İ				İ	i	İ	İ	i	İ	
Buckle	0-4	10-20	1.35-1.45	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	4-14		1.25-1.35		0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	14-22		1.25-1.35		0.14-0.16		0.0-0.5		.32			
	22-34		1.25-1.35		0.16-0.18		0.0-0.5	.37	.37		1	
	34-48		1.25-1.35		0.19-0.21		0.0-0.5		.32		1	
	48-62 62-75		1.25-1.35  1.25-1.35		0.19-0.21  0.19-0.21	,	0.0-0.5		32		1	
										i	į	İ
245:												
Buckle	0-1		1.55-1.65		0.09-0.11		0.5-1.0	.20	.20	5	3	86
	1-7		1.35-1.45		0.19-0.21		0.0-0.5	.32	.32		1	1
	7-25		1.25-1.35		0.14-0.16		0.0-0.5		.32		1	1
	25-35		1.35-1.45  1.45-1.55		0.19-0.21  0.13-0.15		0.0-0.5		.32	1	I I	I
	1 22-00	1 10-23	1 40 - 1 - 00	2.00-0.00	10.12-0.12	1 0.0-2.3	10.0-0.5	1 .20	1 .20	!	1	1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	ors	- 1	Wind  erodi-
and soil name	   	   	bulk   density	bility   (Ksat)	water   capacity	extensi- bility	matter	   Kw	   Kf 	   T 	bility  group	bility  index
	   In	Pct	g/cc	In/hr	In/in	Pct	Pct					
245:	 		 			 			 			
Gapmesa	0-1   1-9   9-20   20-31	20-27	1.35-1.45  1.25-1.35  1.25-1.35  1.25-1.35	0.60-2.00	0.13-0.15   0.16-0.18   0.16-0.18   0.19-0.21	0.0-2.9 3.0-5.9 3.0-5.9 3.0-5.9	0.5-1.0  0.5-1.0  0.0-0.5  0.0-0.5	.28 .37 .37	.28   .37   .37   .32	2	5   5 	56   
	31-40			0.20-0.00								
Barboncito	   0-2   2-6   6-11   11-20	10-20	  1.55-1.65  1.35-1.45  1.35-1.45	0.60-2.00	  0.09-0.11  0.14-0.16  0.19-0.21 	   0.0-2.9   3.0-5.9   3.0-5.9 	  0.5-1.0  0.0-0.5  0.0-0.5	.20   .32   .32 	.20   .32   .32 	   1   	   3   	   86     
250:	   	İ	į I		İ	i I	į	İ	į		İ	į
Hospah	0-3 3-15 15-20		1.25-1.35  1.35-1.50 	0.20-0.60	0.03-0.05  0.14-0.16 	3.0-5.9	0.5-1.0	.05   .20 	.32 .20	2	8   	0
Skyvillage	   0-1   1-5   5-8   8-20	10-15	  1.35-1.45  1.45-1.55  1.45-1.55 	2.00-6.00	0.06-0.08   0.11-0.13   0.14-0.16 	   0.0-2.9   0.0-2.9   3.0-5.9 	  0.5-1.0  0.2-0.6  0.2-0.6 	.10   .24   .32 	.24   .24   .32 	   1   	   4L   	   86   
Rock outcrop	   0		 	   0.00-0.20		 				-		
255:	 		 			 						
Farview	0-1   1-10   10-17   17-20	10-20	1.45-1.60  1.35-1.50  1.35-1.50 	2.00-6.00	0.09-0.11  0.13-0.15  0.13-0.15 	0.0-2.9	0.0-0.5  0.0-0.5  0.0-0.5	.20   .28   .28 	.20   .28   .28 	1     	2	134     
Rock outcrop	   0		 	0.00-0.20		 				-		
258:												
Eagleye	0-2   2-10   10-20		1.35-1.45  1.25-1.35 	0.20-0.60 0.06-0.20 0.00-0.06	0.19-0.21  0.14-0.16 	3.0-5.9   6.0-8.9 	0.0-0.5  0.0-0.5 	.32	.32	2	5	56   
Atchee	0-2   2-12   12-14   14-20	15-27	  1.45-1.55  1.35-1.45  1.35-1.45 		  0.13-0.14  0.07-0.09  0.07-0.09 	0.0-2.9   3.0-5.9   3.0-5.9 	  0.0-0.5  0.0-0.5  0.0-0.5 	.28   .05   .05   .05	.28   .32   .32 	   1   	3     	   86     
Rock outcrop	   0			0.00-0.20		 				-		
260: Quarries and Pits	     0			     0.00-0.20		   		   	   	-	8	0
261: Coal Mine Lands	   			   		   				-		
265: Uranium Mined Lands	     0 	   	     	     0.00-0.20 	   	     		   	   	-	   	   

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	Clay	Moist	Permea-	  Available	Linear	  Organic	LETOS10	n facto		Wind  erodi-	1
and soil name	   	   	bulk   density	bility   (Ksat)	water   capacity	extensi- bility	matter   	Kw	   Kf 	   T 	bility  group 	bility  index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
270:	 											
Alesna	0-1   1-10   10-20	30-40	1.20-1.30  1.35-1.45  1.35-1.45	0.60-2.00   0.20-0.60   0.06-0.20	0.06-0.07  0.15-0.17  0.08-0.10	0.0-2.9 6.0-8.9 6.0-8.9	0.5-1.0  0.5-1.0  0.5-0.5	.05   .15   .05	.37   .32   .20	4	8   	0
	20-26 26-52	40-55   30-40	1.35-1.45  1.50-1.60	0.20-0.60	0.14-0.16	6.0-8.9	0.5-0.5	.20	.20	<u> </u> 		<u> </u> 
	52-60			0.00-0.06								
Rock outcrop	0 			0.00-0.20		 				-		
275:	ĺ	į	į		į	į	į	į	į	į	į	į
Eldado	0-2   2-9		1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	1.15	.28	2	5	56
	2-9   9-13		1.40-1.50  1.40-1.50	0.60-2.00	0.13-0.15	3.0-5.9	0.5-0.5	32	32	l I		
	13-25		1.40-1.50	0.60-2.00	0.13-0.15	3.0-5.9	0.5-0.5	.32	.32	i	ì	ì
	25-43	5-10	1.50-1.60	20.00-20.00	0.01-0.02	0.0-2.9	0.5-0.5	.02	.15	İ	İ	İ
	43-72	1-5	1.50-1.60	20.00-20.00	0.00-0.00	0.0-2.9	0.5-0.5	.02	.10		1	
280:	 	1	 			 		 			1	
Azabache	0-1	27-35	1.35-1.45	0.20-0.60	0.05-0.06	0.0-2.9	0.5-0.9	.05	.32	3	8	0
	1-5	40-50	1.25-1.35	0.01-0.06	0.12-0.14	6.0-8.9	0.5-0.9	.20	.20	i	İ	İ
	5-17		1.45-1.55	0.20-0.60	0.10-0.11	0.0-2.9	0.2-0.8	1.15	.32			
	17-32		1.45-1.55	0.20-0.60	0.04-0.05	0.0-2.9	0.2-0.5	.05	.32	!		
	32-50 50-62		1.45-1.55  1.55-1.65	0.60-2.00	0.03-0.04	0.0-2.9	0.2-0.5	.05	28			
290:	İ	į	į	į	į	į	į	į	į	į	į	į
Rock outcrop	   0			0.00-0.20						-		
Westmion	   0-2	30-40	1.35-1.45	0.20-0.60	0.15-0.17	3.0-5.9	0.5-1.0	1.15	.32	2	   6	48
westillon	2-14		1.40-1.50	0.06-0.20	0.14-0.16	6.0-8.9	0.2-0.6	.20	.20			
Skyvillage	   0-2	10-20	1.35-1.45	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	1.24	1	3	   86
SkyvIIIage	2-13		1.35-1.45	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.6	.24	.24			
291:	 	1	 			 						
Rock outcrop	0									-		
Eagleye	   0-2	30-40	1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	1.10	.37	2	5	56
	2-7	30-40	1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.37	.37	İ	İ	İ
	7-13   13-20	30-40	1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.37	.37			
Atchee	   0-2	   10-15	  1.45-1.55	0.60-2.00	  0.13-0.15	0 0-2 9	0.0-0.5	1.10	1 .28	   1	   4L	   86
Accilee	2-8		1.45-1.55	0.60-2.00	0.13-0.15	0.0-2.9	10.0-0.5	1.15	1 .28	+	41	00
	8-20			0.00-0.01						į	į	İ
300:	 		 			 				[	1	
Regracic	0-2	20-30	1.15-1.25	0.60-2.00	0.10-0.11	0.0-2.9	1.0-2.0	.15	.32	4	6	48
	2-31		1.20-1.25	0.06-0.60	0.14-0.18		1.0-2.0	.20	.20	[	[	
	31-45		1.35-1.40	0.20-0.60	0.07-0.08		0.5-0.9	1.10	.32	1		
	45-50   50-60		1.20-1.25  1.25-1.30	0.20-0.60	0.19-0.21	3.0-5.9	0.5-0.9	.32	32	1	1	1
	50-60   60-80		1.40-1.50	2.00-6.00	0.09-0.14	0.0-2.9	0.5-0.9	1.10	.24	1		
		25								i	i	i

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	Wind  erodi-
and soil name	   		bulk   density	bility   (Ksat)	water   capacity	extensi- bility	matter	Kw	   Kf	   T	bility  group	bility  index
	   In	Pct	g/cc	In/hr	In/in	Pct	Pct	   		   	   	-     
305:	 					! 						
Celavar	0-2	,	1.15-1.25	0.60-2.00	0.16-0.18	0.0-2.9	0.5-1.0	.37	.37	2	5	56
	2-24		1.25-1.35	0.60-2.00	0.14-0.16	0.0-2.9	0.1-0.5	.32	.32			
	24-31	20-30	1.25-1.35	0.60-2.00	0.14-0.16	0.0-2.9	0.1-0.5	.32	.32			
Atarque	0-3	10-18	  1.45-1.55	2.00-6.00	0.11-0.13	   0.0-2.9	0.5-1.0	.24	.24	1	3	   86
	3-14	18-35	1.20-1.30	0.60-2.00	0.14-0.16	0.0-2.9	0.5-0.9	.32	32			
	14-20			0.00-0.20		 						
308:	į	į	į	į	į	į	į	į	į	į	į	į
Fikel	0-3		1.35-1.45	0.20-0.60	0.18-0.20	3.0-5.9	0.5-1.5	.32	.32	5	4	86
	3-14		1.25-1.35  1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9 6.0-8.9	0.5-1.5	20	20			
	32-50		1.35-1.45	0.60-2.00	0.14-0.16	3.0-5.9	0.0-0.3	1.32	1.32			
	50-65		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.3	.20	.20	İ	İ	
	65-70	20-35	1.35-1.45	0.60-2.00	0.14-0.16	3.0-5.9	0.0-0.3	.32	.32	į	į	į
Venzuni	0-7	45-65	1.15-1.25	0.06-0.20	0.12-0.14	6.0-8.9	1.0-2.0	.20	.20	5	4	86
	7-22	60-80	1.30-1.40	0.01-0.06	0.12-0.14	6.0-8.9	1.0-2.0	.20	.20	İ	İ	
	22-42		1.30-1.40	0.01-0.06	0.12-0.14	6.0-8.9	0.5-1.0	.20	.20		[	
	42-56   56-75		1.50-1.60  1.50-1.60	0.20-0.60	0.13-0.14	6.0-8.9 3.0-5.9	0.5-1.0	32	32		 	
										į		
310: Parkelei	   0-2	1 10 20	1.50-1.60	2.00-6.00	0.11-0.13	   0.0-2.9	11.0-2.0	1.24	.24	   5	   3	   86
rarketet	2-21		1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	32	1 .32		2	1 00
	21-55		1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32	i	i	
	55-65	30-40	1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32	į	į	į
312:	 		 	 		 						
Bluewater	0-2		1.15-1.25		0.16-0.18	0.0-2.9	3.0-5.0	.37	.37	5	4L	86
	2-11		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	3.0-5.0	.32	.32			
	11-28   28-50		1.45-1.55  1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	1.0-3.0	32	32			
	50-70		1.30-1.40	0.01-0.06	0.13-0.21	6.0-8.9	1.0-3.0	1 .20	1 .20			
	70-80		1.30-1.40	0.01-0.06	0.13-0.15	6.0-8.9	0.0-0.5	.20	.20	į		
315:	 	 	 	 		 					 	
Flugle	0-3	10-25	1.20-1.30	0.60-2.00	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	3-10	20-35	1.40-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32	İ	İ	İ
	10-28		1.40-1.50		1	3.0-5.9	0.5-1.0	.32	.32			
	28-65 	10-20 	1.45-1.55 	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24			
Fragua	0-2	5-15	1.50-1.60	6.00-20.00	0.09-0.10	0.0-2.9	1.0-2.0	.20	.20	5	2	134
	2-19		1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24			
	19-65 	5-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0 	.24	.24			
316:	į	į	į	į	į	į	į	į	į	į	į	į
Royosa	0-2		1.30-1.40	6.00-20.00		0.0-2.9	1.0-2.0	.20	.20	5	2	134
	2-6		1.45-1.55  1.45-1.55	6.00-20.00		0.0-2.9	0.5-1.0	20	.20   .20		1	
	0-00	1 2-10	11.40-1.00	0.00-20.00	0.03-0.10	U.U-Z.Y 	10.5-1.0	.20	.ZU			

Table 15.--Physical Properties of the Soils--Continued

Map symbol and soil name	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs 	Wind  erodi-	Wind  erodi-
and soil name		 	bulk   density	bility (Ksat)	water   capacity	extensi- bility	matter	   Kw	   Kf	   T	bility  group	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct				 	- I   
317:			 	 		 						
Highdye	0-3		1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	1	3	86
	3-5   5-12		1.45-1.55  1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9 6.0-8.9	0.5-1.0	.32	.32			
	12-20			0.06-2.00								
Evpark	   0-5	10-25	  1.45-1.55	   0.60-2.00	0.16-0.18	   0.0-2.9	11.0-2.0	.37	.37	2	   5	   56
	5-10		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32			
	10-24	!	1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	24-40		 	0.06-2.00 		 						
Bryway	0-4	10-20	1.50-1.60	2.00-6.00	0.11-0.13	0.0-2.9	1.0-2.0	.24	.24	3	3	86
	4-10	1	1.40-1.50	0.06-0.60	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	10-23 23-40	40-55	1.40-1.50 	0.06-0.20	0.14-0.16	6.0-8.9 	0.5-1.0	.20	.20			
320:	 		[ ]	 		 						
Parkelei	l 0-4	5-15	1.35-1.45	2.00-6.00	0.12-0.14	0.0-2.9	1.0-2.0	.24	1 .28	1 5	3	l 86
	4-18	1	1.25-1.35	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			i
i	18-28	20-35	1.25-1.35	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32	İ	İ	
	28-39		1.25-1.35	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	39-52 52-70		1.25-1.35  1.35-1.45	0.60-2.00	0.14-0.16  0.12-0.14	3.0-5.9 0.0-2.9	0.5-1.0  0.5-0.5	.32	.32			
Fraguni	   0-4	   5-10	  1.75-1.85	6.00-20.00	  0.09-0.10	   0.0-2.9	  0.5-1.0	1 .20	1 .20	   5	2	134
	4-20		1.75-1.85	2.00-6.00	0.13-0.15	0.0-2.9	0.0-0.5	.28	.28	-	i -	
i	20-46	5-10	1.75-1.85	6.00-20.00	0.09-0.10	0.0-2.9	0.0-0.5	.20	.20	Ì	İ	j
	46-58		1.70-1.80	0.60-2.00	0.14-0.16	3.0-5.9	0.0-0.5	.32	.32			
	58–70 	10-20 	1.75-1.85	2.00-6.00	0.13-0.15	0.0-2.9 	0.0-0.5	1 .28	1 .28		1	
325:						 				i	İ	
Venzuni	0-2		1.20-1.30	0.06-0.20	0.15-0.17	6.0-8.9	1.0-2.0	.24	.24	5	4	86
	2-12		1.25-1.35	0.06-0.20	0.15-0.17	6.0-8.9	0.5-1.0	.24	.24			
	12-46   46-65		1.25-1.35  1.25-1.35	0.00-0.06	0.14-0.16  0.14-0.16	6.0-8.9   6.0-8.9	0.5-1.0	20	20			
332:			[ [	 		 						
Evpark	0-2	10-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	2	3	86
	2-9	25-35	1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32			
	9-36 36-40	27-35	1.55-1.65 	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	32	32			
			į.	İ	į.	İ	į.			į	į	į
Arabrab	0-2		1.50-1.60	2.00-6.00	0.06-0.11	0.0-2.9	1.0-2.0	1.15	.28	1	6	48
	2-7   7-12		1.45-1.55  1.45-1.55	0.60-2.00	0.14-0.16  0.19-0.21	0.0-2.9 3.0-5.9	0.5-1.0	32	32			
	12-17		1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.0-0.5	.32	32			
	17-20			0.00-0.20						į	ļ	
335:	 		 	 		 						
Venadito	0-3	40-60	1.15-1.25	0.06-0.20	0.14-0.16	6.0-8.9	2.0-3.0	.20	.20	5	4	86
	1 2 20	1 60 00	1.10-1.20	0.01-0.06	0.14-0.16	6.0-8.9	1.0-2.0	.20	.20	1	1	1
	3-30 30-65		1.10-1.20	0.01-0.06	0.14-0.16	6.0-8.9	0.2-1.0	.20	.20	!	!	!

Table 15.--Physical Properties of the Soils--Continued

Map symbol	Depth	   Clay	Moist	Permea-	  Available	Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	
and soil name		   	bulk   density 	bility   (Ksat) 	water   capacity	extensi- bility	matter   	Kw	   Kf	   T 	bility  group 	bility  index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			 		
336:				[ 		 				 		
Nuffel	0-2	10-27	1.20-1.30	0.60-2.00	0.19-0.21	0.0-2.9	0.5-1.0	.43	.43	5	4L	86
	2-10	10-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	İ	į	İ
	10-17		1.20-1.30	0.60-2.00	0.16-0.21	0.0-2.9	0.5-1.0	.43	.43			[
	17-20		1.20-1.30	0.60-2.00	0.16-0.18	0.0-2.9	0.5-1.0	.37	.37			
	20-47		1.30-1.45  1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0  0.5-1.0	.37	.37	 		
	İ	İ	İ	İ	İ	İ	j	İ	į		İ	İ
Venadito	0-2		1.15-1.25	0.06-0.20	0.12-0.14	6.0-8.9	11.0-3.0	.20	.20	5	4	86
	2-9		1.25-1.35  1.35-1.45	0.01-0.06	0.12-0.14	6.0-8.9 6.0-8.9	1.0-2.0	.20	.20	 	1	
	11-65		1.35-1.45	0.01-0.06	0.12-0.14	9.0-11.9		.20	.20			
222			İ				į					
338: Zyme	   0-3	   30-40	1.25-1.35	0.20-0.60	0.18-0.20	   6.0-8.9	0.5-1.0	1.20	1 .37	   2	   7	38
2,110	3-8		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20	-	, ·	
	8-15	40-55	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20	į	į	į
	15-20			0.00-0.06						ĺ		İ
Lockerby	   0-1	   30-40	1.25-1.40	0.20-0.60	0.19-0.21	   3.0-5.9	1.0-2.0	1.37	1.37	   3	   4L	l 86
	1-11		1.25-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20		i	
	11-15	40-55	1.25-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20	į	į	į
	15-26	!	1.25-1.40	0.06-0.06	0.14-0.16	6.0-8.9	0.0-0.5	.20	.20			İ
	26-40			0.00-0.06		 				 		
345:			İ		İ	İ	i		İ		İ	İ
Rock outcrop	0			0.00-0.20		 				-		
Tuces	- 0-1	30-40	1.30-1.40	0.20-0.60	0.05-0.07	3.0-5.9	0.5-0.9	.05	.32	   3	   8	0
	1-4	45-55	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.17	.20	į	į	į
	4-24	!	1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.0-0.5	.17	.20			
	24-40			0.00-0.20		 				 		
350:						! 						
Toldohn	0-4		1.30-1.40	0.20-0.60	0.10-0.12	3.0-5.9	1.0-2.0	.15	.32	2	4L	86
	4-11		1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	11-20			0.00-0.20		 				 		
Vessilla	0-2	5-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	1	3	86
	2-11	5-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	ĺ	İ	Ì
	11-20			0.20-2.00								
Rock outcrop	- 0			0.00-0.20		 				   -		
254												
351: Rock outcrop	·			0.00-0.20		 				   –		
		İ			İ	İ	İ		İ	İ	İ	
Vessilla	0-5	1	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	1	3	86
	5-20			0.20-2.00		 				 		
352:	İ		İ	Ì	İ	İ	İ			İ		İ
Zia	0-3		1.45-1.55	2.00-6.00	0.11-0.13		1.0-2.0	.24	.24	5	3	86
	3-31		1.45-1.55		0.06-0.13		0.5-1.0		.24			
	31-65	8-18	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	 		
353:		İ	<u> </u>	İ		İ				İ		
Mido	0-3		1.50-1.60	6.00-20.00		0.0-2.9	0.4-0.6	.20	.20	5	2	134
	3-65	4-8	1.50-1.60	6.00-20.00	0.09-0.10	0.0-2.9	0.3-0.5	.20	.20			

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs		Wind  erodi-
and soil name	   		bulk   density	bility   (Ksat) 	water   capacity	extensi- bility	matter	Kw	   Kf	   T 	bility  group	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
354:				 		 						
Knifehill	0-2	,	1.25-1.35	0.60-2.00	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	2-6		1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32		ļ	!
	6-11		1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32			
	11-26		1.40-1.50	0.06-0.20	0.14-0.16	6.0-8.9	1.0-2.0	.20	.20			
	26-35		1.40-1.50  1.40-1.50	0.06-0.20	0.14-0.16	6.0-8.9	1.0-2.0	.20	20			
	33-63	33-30	1.40-1.30	0.06-0.20	0.14-0.16	0.0-0.9	11.0-2.0	1 .20	1 .20	 		
355:	İ	İ	İ			İ	İ	İ	İ	İ	İ	į
Rizno	0-3	10-18	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	1	3	86
	3-8	10-18	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24			
	8-20			0.20-2.00								
Tekapo	0-2	1 28-40	1.15-1.25	0.20-0.60	0.15-0.17	3.0-5.9	0.5-1.0	1 .20	1 .37	1 2	l l 5	l l 56
10.000	2-10		1.40-1.50	0.06-0.60	0.15-0.17	6.0-8.9	0.2-1.0	.24	.24	-		
	10-20			0.00-0.20							İ	İ
			!	ļ				ļ	[	ļ		İ
Rock outcrop	0			0.00-0.20						-		
357:				 		 		 			1	
Heshotauthla	0-3	40-50	1.40-1.50	0.06-0.20	0.14-0.16	3.0-5.9	1.0-2.0	.20	.20	5	4	86
	3-18		1.40-1.50	0.00-0.06	0.10-0.12	6.0-8.9	1.0-2.0	.20	.20	İ	i	i
	18-65	50-60	1.40-1.50	0.00-0.06	0.07-0.08	6.0-8.9	0.2-1.0	.20	.20	İ	İ	İ
360:				İ								
Hosta	0-2	1 10 26	1.45-1.55	0.60-2.00	0.16-0.18	0.0-2.9	1.0-2.0	1 .37	1 .37	I I 5	l l 5	l l 56
110364	2-4		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	1.32	1.32		1	1 30
	4-24		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	32	1.32	ì	İ	i
	24-51		1.30-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20	ì	i	ì
	51-65		1.50-1.60	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32	İ	į	į
Concho	0-1 1-5		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	2.0-3.0	.32	.32	5	4	86
	5-32		1.30-1.40  1.25-1.35	0.06-0.20	0.14-0.16  0.14-0.16	6.0-8.9	1.0-2.0	.20	20	1	l i	1
	32-51		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	1 .20	1 .20	1		
	51-65		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20	i		İ
		1										ļ
361:		10 55	11 10 1 00		0 15 0 17							
Monpark	0-4		1.10-1.20  1.25-1.35	0.06-0.20	0.15-0.17  0.15-0.17	6.0-8.9	0.5-1.0  0.5-1.0	.24	.24	3	4	86
	7-27		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	1 .20	.20		1	
	27-40			0.00-0.20								1
		]	!			[	[					
365:		1 10 00	11 50 1 60		10 12 0 15		 					
Vessilla	0-2		1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	1	3	86
	6-15		1.50-1.60  1.50-1.60	2.00-6.00	0.13-0.15  0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	I	1	1
	15-20	10-20		0.20-2.00		0.0-2.9						i i
		i	İ			į	i		İ	i	İ	į
Rock outcrop	0			0.00-0.20			j			-		

Table 15.--Physical Properties of the Soils--Continued

Map symbol and soil name	   Depth	   Clay	   Moist   bulk	   Permea-   bility	  Available   water	Linear extensi-	  Organic   matter	Erosio	n facto	rs	Wind  erodi-  bility	Wind  erodi-  bility
and soff fiame	   	   	density	(Ksat) 	capacity	bility	maccer	   Kw 	   Kf 	   т 	group	index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct	į	į	į	į	į
366:	 	1	 	 		 		 		l I	 	
Bosonoak	0-2 2-5 5-28	20-27 30-35 30-35	   	0.60-2.00 0.20-0.60 0.20-0.60	0.16-0.18  0.19-0.21  0.19-0.21	0.0-2.9 3.0-5.9 3.0-5.9	0.5-1.0 0.0-0.5 0.0-0.5	.37   .32   .32	.37   .32   .32	5   	4L   	86   
	28-40 40-63 63-80	15-27   15-27   20-27	   	0.60-2.00	0.16-0.18  0.16-0.18  0.19-0.21	0.0-2.9	0.0-0.5  0.0-0.5  0.0-0.5	.37   .37   .43	.37 .37 .43	 	 	     
367:			 	 		 		 				
Chunkmonk	0-1   1-4   4-8   8-10   10-20	10-25 10-25	1.45-1.55  1.30-1.40  1.30-1.40  1.30-1.40 	2.00-6.00   0.60-2.00   0.60-2.00   0.60-2.00   0.00-0.60	0.09-0.11  0.09-0.11  0.14-0.16  0.14-0.16	0.0-2.9   0.0-2.9   0.0-2.9   0.0-2.9 	0.5-1.0  0.5-1.0  0.5-0.5  0.5-0.5	.10   .10   .20   .20 	.28   .37   .37   .37 	1       	4L       	86       
368:												
Simitarq	0-1   1-6   6-14   14-20	20-35	1.25-1.35  1.30-1.35  1.30-1.35 	2.00-6.00   0.60-2.00   0.20-0.60   0.20-2.00	0.12-0.14   0.13-0.14   0.14-0.16 	0.0-2.9 3.0-5.9 6.0-8.9	0.5-0.9  0.1-0.5  0.1-0.5 	.24   .32   .32 	.28   .32   .32 	1     	3     	86   
Celavar	0-1			6.00-20.00				 		2	3	   86
Ceravar	1-2   2-11   11-27   27-31   31-40	10-20   20-30   20-30	1.25-1.35   1.35-1.45   1.55-1.65   1.55-1.65	0.60-20.00   2.00-6.00   0.60-2.00   0.60-2.00   0.60-2.00   0.20-2.00	0.11-0.13   0.14-0.16   0.14-0.16   0.14-0.16	0.0-2.9   0.0-2.9   0.0-2.9   3.0-5.9	0.5-1.0   0.5-0.5   0.5-0.5   0.5-0.5	.24   .32   .32   .32	.24   .32   .32   .32	2         	3       	00       
375:	İ	į	į		į	į	į	į	į	į	į	į
Todest	0-1	10-15	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.5-0.9	.28	.28	2	3	86
	1-3 3-10 10-18	20-35	1.50-1.60  1.45-1.55  1.45-1.55	2.00-6.00   0.60-2.00   0.60-2.00	0.13-0.15  0.14-0.16  0.14-0.16	0.0-2.9	0.1-0.5 0.1-0.5 0.1-0.5	.28 .32 .32	.28 .32 .32	 	i   	   
	18-25   25-40	10-20	1.45-1.55 	0.60-2.00	0.15-0.17	0.0-2.9	0.1-0.5	.37 	.37 			
Shadilto	   0-1   1-9		  1.45-1.65  1.45-1.65	   2.00-6.00   2.00-6.00	  0.05-0.06  0.10-0.12	   0.0-2.9   0.0-2.9	  0.1-0.5  0.1-0.5	   .15   .24	   .24   .24	1	6	48
	9-13   13-15   15-20	8-18	1.45-1.65  1.45-1.65  1.45-1.65	2.00-6.00   2.00-6.00   2.00-6.00   0.00-0.60	0.10-0.12  0.10-0.12  0.10-0.12 	0.0-2.9	0.1-0.5  0.1-0.5  0.1-0.5	.24	.24		     	
376:	 											
Todest	0-1 1-8 8-14	20-35	1.50-1.60  1.45-1.55  1.45-1.55	0.60-2.00	0.12-0.14  0.14-0.16  0.13-0.14	0.0-2.9	0.5-0.9 0.1-0.5 0.1-0.5	.28 .32 .32	.28 .32 .32	2	3	86
	14-24		1.45-1.55		0.13-0.14		0.1-0.5	.32	.32	   	   	
380:	 		[ [	 		 						
Berryhill	0-2	45-60	1.25-1.35  1.40-1.50	0.01-0.06	0.13-0.15 0.13-0.15	6.0-8.9	0.5-1.0	.20	.20	5 	4	86
	12-26   26-39	45-60	1.40-1.50  1.40-1.50	0.01-0.06	0.13-0.15  0.13-0.15	6.0-8.9	0.5-1.0	20	20   .20		 	
	39-70 	45-60	1.40-1.50	0.01-0.06 	0.13-0.15	6.0-8.9	0.2-0.5	.20 	.20			

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	Wind  erodi-
and soil name	   		bulk density	bility (Ksat)	water   capacity	extensi-   bility 	matter	   Kw	   Kf 	   T 	bility  group	bility  index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
380:				 								
Casamero	0-3	1	1.25-1.35	0.06-0.20	0.13-0.15	6.0-8.9	0.5-1.0	.20	.20	2	4	86
	3-11	1	1.40-1.50	0.01-0.06	0.13-0.15	6.0-8.9	0.5-0.5	.20	.20			
	11-18	50-70	1.40-1.50	0.01-0.06	0.13-0.15	6.0-8.9	0.5-0.5	.20	.20			
	18-20			0.00-0.20								
385:												
Mcorreon	0-2	20-27	1.25-1.35	0.60-2.00	0.03-0.04	0.0-2.9	0.5-2.0	.05	.37	5	8	0
	2-5	30-40	1.25-1.35	0.20-0.60	0.18-0.20	3.0-5.9	0.5-2.0	.32	.32			
	5-16	40-60	1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9	0.5-2.0	.20	.20			
	16-22	40-60	1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	22-70	40-60	1.35-1.45	0.06-0.20	0.13-0.14	6.0-8.9	0.5-1.0	.20	.20			
	70-74	j		0.00-0.60	j	ļ	j			į	į	į
Rock outcrop	0			0.00-0.00						-		
390:	 		 			 					1	
Banquito	0-2	10-20	1.35-1.50	0.60-2.00	0.15-0.17	0.0-2.9	0.5-1.0	.55	.55	2	j 3	86
-	2-9		1.25-1.40	0.20-0.60	0.19-0.21	3.0-5.9	0.2-0.5	.32	.32	i	i	i
	9-17		1.25-1.40	0.60-2.00	0.16-0.18	0.0-2.9	0.2-0.5	.37	.37	i	ì	i
	17-22		1.25-1.40	0.60-2.00	0.14-0.16	3.0-5.9	0.2-0.5	.32	.32	ì	i	i
	22-36		1.35-1.50	2.00-6.00	0.11-0.13	0.0-2.9	0.2-0.5	.24	.24	ì	i	i
	36-40			0.01-20.00						i	İ	
395:	 		 	 		 				 		
Cabezon	0-2	20-27	1.25-1.35	0.60-2.00	0.08-0.09	0.0-2.9	0.5-2.0	.10	.37	1	8	i 0
	2-6	35-40	1.30-1.40	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32	i	i	i
	6-14	40-60	1.35-1.45	0.06-0.20	0.13-0.14	6.0-8.9	0.5-1.0	.15	.20	i	i	i
	14-17			0.00-0.06						i	i	i
	17-20			0.00-0.06						į	į	
Mcorreon	0-2	20-27	1.25-1.35	0.60-2.00	0.14-0.16	0.0-2.9	10.5-2.0	1.24	1.37	   5	   6	   48
	2-13		1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9	0.5-2.0	.20	.20	i	i i	1
	13-19		1.35-1.45	0.06-0.20	0.13-0.14	6.0-8.9	0.5-2.0	1.15	1 .20	ì	i	i
	19-27		1.25-1.35	0.20-0.60	0.18-0.20	3.0-5.9	0.5-1.0	.28	1.32	i	i	1
	27-70		1.25-1.36	0.20-0.60	0.18-0.20	3.0-5.9	0.5-1.0	1 .28	1.32	i	i	1
	70-80			0.00-0.60						i	İ	
400:						 						
Shoemaker	0-2	5-15	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	1 2.0-3.0	1 .20	1 .20	1 2	1 2	1 134
Silvellaker	2-7		1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	1 .28	1 .28	4	4	1 124
	7-20		1.50-1.60	0.60-2.00	0.13-0.15	0.0-2.9	0.5-1.0	32	1 .32	ŀ		
	20-28		1.50-1.60	0.60-2.00	0.14-0.16	0.0-2.9	0.3-1.0	32	32	ŀ		
	20-28			0.00-2.00		0.0-2.9						
Ctommi		6 10	11 40 1 50				1.0-2.0			1	2	
Stozuni	0-2		1.40-1.50	2.00-6.00	0.11-0.13	0.0-2.9		.24	.24	1	3	86
	2-10		1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	1	1	1
	10-15	6-18	1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	0.2-1.0	.28	.28	1	1	1
	15-20			0.00-0.20		 				1	1	I
	I	1	1	I	1	1		1	1	1	1	1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	Moist   bulk	Permea-	Available	   Linear   extensi-	Organic	ETOSIO	n facto	ı.s	Wind  erodi-	Wind  erodi-
and soil name	   	   	bulk   density 	bility   (Ksat) 	water   capacity	extensi-   bility 	matter   	   Kw 	   Kf 	   T 	bility  group 	bility  index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
103:	İ	į		İ	İ	İ	İ		į	į	į	İ
Valnor	0-2		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4	86
	2-4		1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
	4-20 20-34	:	1.35-1.45  1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9   6.0-8.9	0.5-1.0  0.5-1.0	20	20			
	34-40			0.00-0.20								
Techado	   0-3	40-60	1.20-1.30	   0.06-0.20	0.11-0.12	   6.0-8.9	1.0-2.0	1 .10	.20	2	   4L	86
	3-13	:	1.25-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	13-20 			0.00-0.20		 						
104:		į	į		į	į	į	į	į	į	į	
Rock outcrop	0 			0.00-0.20		 				-		
Techado	0-5	27-40	1.35-1.40	0.20-0.60	0.16-0.18	3.0-5.9	1.0-2.0	.15	.32	2	4L	86
	5-8		1.30-1.40	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20	ļ	ļ	ļ
	8-17   17-20	40-60	1.30-1.40	0.06-0.20	0.14-0.16	6.0-8.9 	0.5-1.0	.20	.20			
Stozuni	   0-1	   6-18	  1.40-1.50	2.00-6.00	0.08-0.10	0.0-2.9	1.0-2.0	.15	.24	1	4	   86
5005411	1-7		1.40-1.50	2.00-6.00	0.09-0.10	0.0-2.9	0.2-1.0	1.15	.24	-	-	
	7-20			0.20-2.00		ļ				į	į	į
05:	 			 		 						
Fortwingate	0-1			6.00-20.00						2	5	56
	1-4	1	1.15-1.25	0.60-2.00	0.13-0.15	0.0-2.9	1.0-2.0	.32	.37	ļ	!	!
	4-9   9-26	1	1.35-1.45	0.20-0.60	0.17-0.19	6.0-8.9	0.5-1.0	.32	.32	1		
	26-40	40-50	1.25-1.35	0.06-0.20	0.12-0.14	6.0-8.9	0.5-1.0					
Owlrock	   0-1	10-20	  1.15-1.25	   0.60-2.00	0.06-0.08	0.0-2.9	11.0-2.0	.10	.37	1 1	   6	86
	1-6		1.25-1.35	0.60-2.00	0.13-0.15	0.0-2.9	1.0-2.0	.10	.37	i	į	İ
	6-13	18-25	1.25-1.35	0.60-2.00	0.13-0.15	0.0-2.9	1.0-2.0	.10	.37	İ	Ì	İ
	13-20 			0.00-0.60		 						
06:		15.05							12			
Polich	0-13	1	1.15-1.25  1.20-1.30	0.60-2.00	0.19-0.21	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	23-40	1	1.25-1.35	0.20-0.60	0.19-0.16	3.0-5.9	11.0-2.0	32	.32	ŀ		
	40-48		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	32	1.32	ì	1	
	48-58	1	1.30-1.40	0.20-0.60	0.19-0.21	6.0-8.9	0.5-0.5	.32	.32	i	i	İ
	58-70	20-27	1.30-1.40	0.60-2.00	0.16-0.18	3.0-5.9	0.5-0.5	.37	.37			İ
07:												
Cinnadale	0-2		1.25-1.35	!	0.09-0.11	0.0-2.9	0.5-1.0	1.10	.28	1	4L	86
	2-9		1.35-1.45	2.00-6.00	0.08-0.10	0.0-2.9	0.5-0.5	1.10	.28		1	
	9-15   15-20		1.35-1.45	2.00-6.00	0.08-0.10	0.0-2.9	0.5-0.5	.10	.28			
Heckly	   0-3	10-20	  1.45-1.55	2.00-6.00	0.05-0.07	0.0-2.9	0.5-1.0	.05	.24	2	8	   0
<del>-</del>	3-15		1.25-1.35	0.06-0.20	0.12-0.14	6.0-8.9	0.5-0.5	.10	.20	İ	į	i
	15-38		1.25-1.35	0.20-0.60	0.14-0.16	3.0-5.9	0.5-0.5	.15	.37	İ	į	İ
	38-40			0.20-2.00								1

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	Moist	Permea-	  Available	Linear	  Organic	Erosio	n facto	ors	- 1	Wind  erodi-
and soil name	   		bulk   density	bility   (Ksat)	water   capacity	extensi- bility	matter	Kw	Kf	   T	bility  group	bility  index
	   In	Pct	g/cc	In/hr	In/in	Pct	Pct			-  		- I ————— 
408:	 			 		 						
Mirabal	0-1			6.00-20.00			i	i	i	2	8	0
	1-2	5-10	1.30-1.40	6.00-20.00	0.01-0.03	0.0-2.9	0.5-1.0	.02	1.17			
	2-6	8-15	1.35-1.45	2.00-6.00	0.08-0.10	0.0-2.9	0.5-0.5	1.15	.24			
	6-13		1.35-1.45	2.00-6.00	0.06-0.08	0.0-2.9	0.5-0.5	1.10	.24			
	13-30	:	1.35-1.45		0.03-0.05	0.0-2.9	0.5-0.5	.05	.24			
	30-40			0.00-20.00								
Zuni	   0-1			6.00-20.00		 				1 2	4	l l 86
2011	1-3	1	1.25-1.35	2.00-6.00	0.09-0.11	0.0-2.9	0.5-1.0	1.10	.24	2	4	1
	3-18		1.25-1.35	0.06-0.20	0.12-0.14	6.0-8.9	10.5-0.5	1.15	1.32			
	18-27	:	1.35-1.45	0.06-0.20	0.11-0.13	6.0-8.9	0.5-0.5	.17	.32	i	1	
	27-40			0.00-0.20						i	i	
	ĺ		İ	ĺ	İ	ĺ	İ	İ	İ	İ	İ	
409:											_	
Rauster	0-1		1.35-1.45		0.19-0.21		1.0-2.0	.32	.32	5	5	56
	1-5		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	1.0-2.0	.20	.20			
	5-28		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	1.0-2.0	.20	.20			
	28-55 55-60	40-50	1.25-1.35	0.01-0.06	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	33-60			0.00-0.06		 						
Rock outcrop	0			0.00-0.20			ļ			-		
410:	 			 	 	 				l I	İ	I I
Montillo	0-3	15-27	1.25-1.35	0.60-2.00	0.10-0.12	0.0-2.9	2.0-5.0	.10	.37	2	7	38
	3-8		1.15-1.25	0.20-0.60	0.15-0.17	3.0-5.9	2.0-4.0	.37	.37	i	i	i
	8-15	40-60	1.35-1.45	0.06-0.20	0.12-0.14	6.0-8.9	1.0-3.0	.24	.24	i	i	i
	15-27	50-70	1.35-1.45	0.06-0.20	0.13-0.15	6.0-8.9	1.0-3.0	.20	.20	Ì	İ	İ
	27-32	40-60	1.40-1.50	0.06-0.20	0.09-0.10	6.0-8.9	1.0-3.0	.05	.20	İ	İ	İ
	32-40			0.01-20.00								
										_		
Tsoodzil	0-3		1.20-1.30	0.60-2.00	0.11-0.12	0.0-2.9	2.0-5.0	1.15	.43	5	8	0
	3-10		1.50-1.60	0.20-0.60	0.11-0.12	3.0-5.9	2.0-3.0	.32	.37	1		
	10-21   21-46		1.30-1.40	0.06-0.20	0.13-0.15	6.0-8.9	1.0-3.0	.20	.20	1		
	46-70		1.30-1.40  1.40-1.50	0.06-0.20	0.13-0.15	6.0-8.9   6.0-8.9	0.5-1.0	1 .24	32	ŀ	1	
	10 70								.52	ì	i	i
411:	j	į	İ	j	j	j	į	İ	İ	İ	İ	j
Ligocki	0-2	10-20	1.25-1.35	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	2-8	10-20	1.25-1.35	2.00-6.00	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28			
	8-21		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	0.5-0.5	.20	.20			
	21-30		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.5-0.5	.28	.32			
	30-41		1.35-1.45	0.60-2.00	0.11-0.13	0.0-2.9	0.5-0.5	.20	.32			
	41-70	20-30	1.35-1.45	0.60-2.00	0.14-0.16	0.0-2.9	0.5-0.5	.32	.32			
Robolata	   0-6	   15-25	1.25-1.35	0.60-2.00	0.16-0.18	   0.0-2.9	1.0-2.0	.37	.37	4	   5	   56
10001414	6-12		1.25-1.35	0.60-2.00	0.16-0.18	0.0-2.9	11.0-2.0	37	37	*	1	1 20
	12-20		1.25-1.35	0.06-0.20	0.14-0.16	6.0-8.9	11.0-2.0	.20	.20	i i	1	
	20-30		1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	32	1.32	i	i	i
	30-50		1.25-1.35	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	32	i	1	i
	50-70		1.35-1.45	2.00-6.00	0.05-0.07	0.0-2.9	0.5-0.5	1.10	.24	i	i	i
			i					i	i	i	i	i

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	1
and soil name	   	   	bulk   density 	bility   (Ksat) 	water   capacity 	extensi- bility	matter   	   Kw 	   Kf 	   т 	bility  group 	bility  index 
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
412: Rock outcrop	0			0.00-0.20						-		
Rionutria	0-3 3-12 12-24 24-40	35-40	1.15-1.25  1.25-1.35  1.25-1.35 	0.60-2.00   0.20-0.60   0.20-0.60   0.00-0.60	0.10-0.12   0.10-0.12   0.11-0.13 	0.0-2.9   3.0-5.9   3.0-5.9 	  1.0-2.0  1.0-2.0  0.5-1.0 	.15	.37   .32   .32 	2	   6   	   48   
Zaster	   0-3   3-11   11-27   27-40	10-20	  1.15-1.25  1.25-1.35  1.25-1.35 	2.00-6.00   2.00-6.00   2.00-6.00   0.00-0.20	  0.04-0.06  0.13-0.15  0.05-0.07 	   0.0-2.9   0.0-2.9   0.0-2.9 	  0.5-1.0  0.5-1.0  0.5-0.5 	.05   .20   .05 	.37   .37   .37   .37	   2     	   8     	   0     
413: Morclay	0-1   1-5   5-48   48-56   56-70   70-80	40-60   40-60   40-60	  1.15-1.25  1.35-1.45  1.35-1.45  1.35-1.45  1.35-1.45	0.06-0.20   0.01-0.06   0.01-0.06   0.01-0.06   0.01-0.06   0.00-0.06	  0.15-0.17  0.14-0.16  0.14-0.16  0.14-0.16  0.14-0.16	6.0-8.9   6.0-8.9   6.0-8.9   6.0-8.9   6.0-8.9	  0.5-1.0  0.5-1.0  0.5-0.5  0.5-0.5  0.5-0.5	.24   .20   .20   .20   .20   .20	.24   .20   .20   .20   .20   .20	   5       	   4       	   86       
414: Zunalei	   0-1   1-6   6-20   20-50   50-70	10-15   20-35   10-20	  1.30-1.40  1.35-1.45  1.25-1.35  1.35-1.45  1.35-1.45	0.60-2.00	  0.09-0.11  0.13-0.15  0.14-0.16  0.13-0.15  0.13-0.15	0.0-2.9   0.0-2.9   3.0-5.9   0.0-2.9   0.0-2.9	  1.0-2.0  0.5-1.0  0.5-0.5  0.5-0.5  0.5-0.5	.20   .28   .32   .28   .28	.20   .28   .32   .28	   5     	   2     	   134     
Corzuni	   0-1   1-8   8-29   29-45   45-70	10-20	  1.30-1.40  1.35-1.45  1.35-1.45  1.35-1.45	6.00-20.00   6.00-20.00   2.00-6.00   2.00-6.00   2.00-6.00	  0.09-0.11  0.13-0.15  0.13-0.15  0.13-0.15	   0.0-2.9   0.0-2.9   0.0-2.9   0.0-2.9	  1.0-2.0  0.5-1.0  0.5-0.5  0.5-0.5	   .20   .28   .28   .28	   .20   .28   .28   .28	   5       	   2     	   134       
415: Tsoodzil	   0-3   3-7   7-22   22-65	30-40 40-60	  1.60-1.70  1.55-1.65  1.45-1.55  1.45-1.55	0.60-2.00   0.20-0.60   0.06-0.20   0.06-0.20	0.09-0.10  0.18-0.20  0.11-0.13  0.13-0.14	0.0-2.9   0.0-2.9   6.0-8.9   6.0-8.9	  2.0-5.0  2.0-3.0  0.5-1.0  0.5-1.0	.15   .28   .10   .15	.37   .32   .20   .20	   5     	   8     	     0   
Rubble Land	   0					 				   5		
416: Rock outcrop	     0			0.00-0.20		   				-		
Bluesky	   0-5   5-8   8-20		,	  20.00-20.00  20.00-20.00   0.20-2.00		   0.0-2.9   0.0-2.9 	  0.5-0.5  0.5-0.5 	.17   .17   .17	   .17   .17 	   1   	   1   	220     
418: Asaayi	   0-1   1-3   3-5   5-16   16-20	10-19	    1.25-1.35  1.25-1.35  1.25-1.35 	   6.00-20.00   2.00-6.00   2.00-6.00   0.20-0.60   0.20-2.00	    0.11-0.13  0.13-0.15  0.18-0.20 	     0.0-2.9   0.0-2.9   3.0-5.9 	  0.5-1.0  0.5-0.5  0.5-0.5	     .10   .28   .32 	     .28   .28   .32 	   1   1     	   4       	   86       

Table 15.--Physical Properties of the Soils--Continued

Map symbol and soil name	   Depth 	   Clay	Moist   bulk	   Permea-   bility	  Available   water	   Linear   extensi-	  Organic   matter	Erosio	n facto 	ı.s	Wind  erodi-  bility	Wind  erodi-  bility
and soll name	   	   	bulk   density 	DITITY   (Ksat) 	water   capacity 	extensi-   bility 	matter   	   Kw 	   Kf 	   T 	group	index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
418:	 			 		 				 		
Osoridge	0-2	30-40	1.15-1.25	0.20-0.60	0.11-0.13	3.0-5.9	0.5-1.0	.10	.32	1	7	38
	2-6	•	1.25-1.35	0.06-0.20	0.13-0.15	6.0-8.9	0.5-0.5	.15	.20	ļ		
	6-18   18-20	40-50	1.35-1.45	0.06-0.20	0.14-0.16	6.0-8.9 	0.5-0.5	.20	.20			
419:	İ			 								
Fortwingate	l l 0-5	1 10-20	1.45-1.55	2.00-6.00	0.06-0.08	0.0-2.9	10.5-1.0	1 .10	1 .24	2	l l 6	1 48
	5-13	,	1.25-1.35	0.06-0.20	0.13-0.15	6.0-8.9	0.5-0.5	.17	.20	i -		
	13-21	30-40	1.35-1.45	0.20-0.60	0.19-0.21	6.0-8.9	0.5-0.5	.32	.32			
	21-26	•	1.40-1.50	0.20-0.60	0.14-0.16	6.0-8.9	0.5-0.5	.28	.32	ļ		
	26-40			0.20-2.00		 		 		 		
Cinnadale	0-6	10-18	1.25-1.35	2.00-6.00	0.04-0.06	0.0-2.9	0.5-1.0	.02	.24	1	8	0
	6-11	1	1.35-1.45	2.00-6.00	0.08-0.10	0.0-2.9	0.5-0.5	.10	.28	ļ		
	11-20 			0.20-2.00		 						
Rock outcrop	0			0.00-0.20		 				-		
420:										İ		
Seco	0-3	35-40	1.20-1.30	0.20-0.60	0.19-0.21	3.0-5.9	2.0-4.0	.32	.32	5	4	86
	3-11	,	1.20-1.30	0.06-0.20	0.14-0.16	6.0-8.9	1.0-3.0	.20	.20			
	11-23	1	1.20-1.30	0.01-0.06	0.14-0.16	6.0-8.9	1.0-3.0	.20	.20			
	23-58 58-70	•	1.25-1.35  1.20-1.30	0.01-0.06	0.14-0.16	6.0-8.9   6.0-8.9	0.5-1.0	20	20			
425:				 		 						
Montillo	0-2	15-27	1.40-1.50	0.60-2.00	0.14-0.15	0.0-2.9	2.0-5.0	.20	.37	2	7	38
	2-8	40-50	1.40-1.50	0.06-2.00	0.13-0.14	6.0-8.9	2.0-4.0	.15	.20	į	į	j
	8-18	1	1.40-1.50	0.06-0.20	0.11-0.12	6.0-8.9	1.0-2.0	.10	.20			
	18-35   35-40	50-60	1.40-1.50	0.06-0.20	0.07-0.08	6.0-8.9 	0.5-1.0	.05	.20			
		İ	İ		İ	İ	İ			į	İ	İ
Canoneros	0-2	•	1.20-1.30	0.60-2.00	0.10-0.12	0.0-2.9	2.0-4.0	.10	.37	1	8	0
	2-8	•	1.35-1.45	0.20-0.60	0.17-0.19	3.0-5.9	0.5-2.0	.32	.32			
	8-13 13-20	45-60	1.25-1.35	0.06-0.20	0.13-0.15	6.0-8.9 	0.5-2.0	.20	.20			
430:				 		 						
Montillo	0-4	15-27	1.40-1.50	0.60-2.00	0.13-0.14	0.0-2.9	2.0-5.0	.20	.37	2	7	38
	4-13	40-50	1.40-1.50	0.06-2.00	0.13-0.15	6.0-8.9	2.0-4.0	.20	.20	İ	į	j
	13-31	50-70	1.40-1.50	0.06-0.20	0.13-0.15	6.0-8.9	1.0-2.0	.20	.20			
	31-38	50-60	1.40-1.50	0.06-0.20	0.11-0.13	6.0-8.9	0.5-1.0	1.10	.20			
	36-40			0.01-20.00								
435:										ļ		
Tsoodzil	0-3	,	1.40-1.50		0.13-0.14		2.0-5.0		.37	4	8	0
	3-11	1	1.45-1.55  1.35-1.45	1	0.13-0.14	1	2.0-3.0  1.0-3.0	!	20	 	 	I
	25-32	1	1.50-1.60	1	0.11-0.13		0.5-1.0	'	.20			
	32-65	,	1.60-1.70	0.20-0.60	0.05-0.06	3.0-5.9	0.2-0.5	.05	.32	İ	İ	
Amcec	0-4	15-25	1.10-1.20	0.60-2.00	0.02-0.03	   0.0-2.9	2.0-5.0	.05	.37	3	8	0
	4-16		1.15-1.25		0.08-0.09		2.0-4.0	.10	.37	į	j	j
	16-39	10-20	1.50-1.60	2.00-6.00	0.01-0.02	0.0-2.9	0.1-0.5	.02	.20			
	39-53	5-15	1.45-1.55	6.00-20.00	0.00-0.01	0.0-2.9	0.1-0.5	.02	.15			
	53-70		1.45-1.55	6.00-20.00		0.0-2.9	0.1-0.5	1 .	.15	i		

Table 15.--Physical Properties of the Soils--Continued

Map symbol and soil name	   Depth	   Clay	   Moist   bulk	Permea- bility	  Available   water	Linear extensi	Organic matter	Erosio	n facto 	rs 	Wind  erodi-  bility	Wind  erodi-  bility
and soff hame		   	density	(Ksat)	capacity	bility	maccer	Kw	Kf	   T 	group	index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			İ		İ
140:	İ	į		į		İ	j	İ	İ	İ	İ	İ
Chivato	- 0-2		1.20-1.30	0.01-0.06	0.14-0.16	6.0-8.9	2.0-4.0	.20	.20	5	4	86
	2-13		1.25-1.35	0.01-0.06	0.12-0.15	6.0-8.9	2.0-3.0	.20	.20		ļ	
	13-40		1.25-1.35	0.01-0.06	0.12-0.15	6.0-8.9	1.0-3.0	.20	.20			
	40-52   52-65		1.25-1.35  1.25-1.35	0.01-0.06	0.12-0.15 0.12-0.15	6.0-8.9   6.0-8.9	0.0-1.0	20	20			
25:			[ [	[ [		 						
Silcat	- 0-2	30-40	1.25-1.35	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32	5	4	86
	2-38	45-55	1.45-1.55	0.01-0.06	0.13-0.15	6.0-8.9	1.0-2.0	.20	.20			
	38-65	40-55	1.45-1.55	0.01-0.06	0.13-0.15	6.0-8.9	0.5-1.0	.20	.20	İ		
50:					j	ļ						
Bryway	- 0-2		1.50-1.60	0.60-2.00	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	3	5	56
	2-6	:	1.40-1.50	0.06-0.60	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20			
	6-32	40-55	1.40-1.50	0.06-0.20	0.14-0.16	6.0-8.9	0.5-1.0	.20	.20	   		
Galzuni	- l 0-2	1 20-27	1.20-1.30	0.60-2.00	0.16-0.18	0.0-2.9	1.0-2.0	1 .37	1 .37	l I 5	l l 6	l l 48
	2-4	,	1.40-1.50	0.06-0.20	0.14-0.16	6.0-8.9	0.2-1.0	.20	.20	-		
	4-23		1.40-1.50	0.06-0.20	0.14-0.16	6.0-8.9	0.2-1.0	.20	.20	i	i	i
	23-32		1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32	i	i	i
	32-52	35-45	1.35-1.45	0.20-0.60	0.15-0.17	3.0-5.9	0.2-1.0	.32	.32	i	į	i
	52-65	20-35	1.40-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32	İ	İ	į
55:				 								
Parkelei	- 0-3		1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	3-12	:	1.55-1.65	0.20-0.60	0.19-0.21	3.0-5.9	0.5-1.0	.32	.32			
	12-21		1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	21-65	10-20	1.50-1.60	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	 		
Evpark	- 0-3	10-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	2	3	86
	3-16	25-35	1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	1.0-2.0	.32	.32			
	16-20		1.55-1.65	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32			
	20-29	:	1.55-1.65	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32			
	29-35	:	1.45-1.55	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32		ļ	
	35-40			0.20-2.00		 						
60:	İ	İ	İ	ĺ		ĺ		İ	İ	ĺ	ĺ	Ì
Flugle	- 0-3		1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	3-35		1.50-1.60	0.60-2.00	0.14-0.16	0.0-2.9	0.2-1.0	.32	.32			
	35-65	10-20	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-1.0	.28 	.28 			
Teczuni	- 0-2	15-25	1.15-1.25	0.60-2.00	0.16-0.18	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	2-16	30-40	1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32			
	16-33	35-40	1.35-1.45	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32			
	33-65	40-50 	1.40-1.50	0.06-0.20	0.14-0.16	3.0-5.9	0.2-1.0	.20 	.20 	 		
661:	į			ļ	j	į						
Flugle	- 0-3	,	1.40-1.50	2.00-6.00	0.13-0.15	0.0-2.9	1.0-2.0	.28	.28	5	3	86
	3-17	20-35	1.50-1.60	0.60-2.00	0.14-0.16	0.0-2.9	0.2-1.0	.32	.32			
	17-65	1	1.50-1.60	2.00-6.00	0.13-0.15	0.0-2.9	0.2-1.0	.28	.28	1		

Table 15.--Physical Properties of the Soils--Continued

Map symbol	   Depth	   Clay	   Moist	   Permea-	  Available	   Linear	  Organic	Erosio	n facto	rs	Wind  erodi-	Wind  erodi-
and soil name			bulk	bility	water	extensi-	matter				bility	1 -
	 		density	(Ksat)	capacity	bility 		Kw	Kf	T	group	index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
561:	 											
Plumasano	0-2	1	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	2-11	,	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-1.0	.24	.24			
	11-27	1	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-1.0	.24	.24			
	27-43	10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.2-1.0	.28	.28			
	43-53	10-20	1.45-1.55	2.00-6.00	0.13-0.15	0.0-2.9	0.2-1.0	.28	.28			
	53–65 	20-30	1.40-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	.32	.32			
565:	 					! 						
Plumasano	0-3	10-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.5-1.0	.24	.24	4	3	86
	3-24	10-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-1.0	.24	.24			
	24-36	4-15	1.55-1.65	6.00-20.00	0.06-0.08	0.0-2.9	0.2-1.0	.17	.17			
	36-65	10-20	1.45-1.55	2.00-6.00	0.11-0.13	0.0-2.9	0.2-1.0	.24	.24			İ
Rock outcrop	0			0.00-0.20						-		
566:	 		 	 		 						
Bamac	0-2	5-15	1.55-1.65	6.00-20.00	0.03-0.04	0.0-2.9	0.5-1.0	.05	.24	5	8	0
	2-8	5-15	1.55-1.65	6.00-20.00	0.08-0.09	0.0-2.9	0.2-0.9	.15	.24	İ	İ	Ì
	8-30	2-10	1.40-1.50	20.00-20.00	0.01-0.02	0.0-2.9	0.2-0.9	.02	.10	i	İ	Ì
	30-63	2-10	1.40-1.50	20.00-20.00	0.01-0.02	0.0-2.9	0.2-0.9	.02	.10	į	į	į
575:	 	 	 	 		 					l I	1
Ramah	0-3	10-20	1.35-1.45	2.00-6.00	0.11-0.13	0.0-2.9	1.0-2.0	.24	.24	j 5	3	86
	3-8	20-35	1.45-1.55	0.60-2.00	0.14-0.16	0.0-2.9	0.2-1.0	.32	.32	i	İ	i
	8-15		1.40-1.50	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32	i	İ	ì
	15-33	30-40	1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32	i	İ	i
	33-41	1	1.45-1.55	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	.32	.32	i	İ	ì
	41-62	1	1.45-1.55	0.60-2.00	0.14-0.16	0.0-2.9	0.2-1.0	.32	.32	İ	į	
Pescado	   0–3	10-20	1.45-1.55	2.00-6.00	  0.13-0.15	0.0-2.9	0.2-1.0	1.28	1.28	1	3	   86
200000	0 3   3-10		1.40-1.50	0.60-2.00	0.14-0.16	3.0-5.9	0.2-1.0	1.32	1.32	-		
	10-16		1.50-1.60	0.20-0.60	0.19-0.21	3.0-5.9	0.2-1.0	1 .32	1.32			i
	16-20			0.01-20.00								
	l			l		l	-1	-	l	· I ———	l	·

Table 16.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth   	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum     	Salinity     	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
3:					 	 	
Water	-				 	 	
.0:					! 		
Tsosie	- 0-2	5.0-15	7.4-8.4	1-5	0	0.0-2.0	1-5
	2-7	10-20	7.4-8.4	1-5	0	0.0-2.0	1-5
	7-13	10-20	7.9-9.0	1-5	0	0.0-2.0	10-13
	13-35	10-20	7.9-9.0	1-5	0	0.0-2.0	13-20
	35-47	15-25	7.9-9.0	1-5	0	0.0-2.0	13-20
	47-65	15-25	7.9-9.0	1-5	0	0.0-2.0	13-20
Councelor	- 0-2	5.0-10	7.4-7.8	1-5	0	0.0-2.0	0
	2-20	5.0-10	7.4-7.8	1-5	0	0.0-2.0	0
	20-47	5.0-10	7.4-8.4	1-10	0	0.0-2.0	1-5
	47-65	10-20	7.4-8.4	1-10	0	0.0-2.0	1-5
Blancot	-  0-3	5.0-15	   7.4-8.4	0-1	   0	   0.0-2.0	   0
	3-11	10-20	7.4-8.4	0-1	i o	0.0-2.0	1-5
	11-16	10-20	7.4-8.4	0-1	i o	0.0-2.0	1-5
	16-37	10-20	7.4-8.4	0-1	i o	0.0-2.0	1-5
	37-65	5.0-10	7.4-8.4	0-1	0	0.0-2.0	0-5
1:			 	 	 	 	
 Doakum	- 0-2	5.0-10	6.6-7.3	0-1	0	0.0-2.0	0
	2-8	10-20	6.6-7.8	0-1	0	0.0-2.0	j 0
	8-13	10-20	6.6-7.8	0-1	0	0.0-2.0	0
	13-21	10-20	6.6-7.8	0-1	0	0.0-2.0	0
	21-42	10-20	7.4-7.8	1-5	0	0.0-2.0	1-5
	42-65	5.0-15	7.4-7.8	1-5	0	0.0-2.0	1-5
Betonnie	- l 0-3	5.0-10	6.6-7.3	0	l l 0	0.0-2.0	1 0
	3-11	5.0-15	6.6-7.3	0	0	0.0-2.0	j 0
	11-21	5.0-15	6.6-7.3	0	0	0.0-2.0	0
	21-29	5.0-10	7.4-8.4	1-5	0	0.0-2.0	0
	29-45	5.0-15	7.4-8.4	1-5	0	0.0-2.0	0
	45-52	5.0-10	7.4-8.4	1-5	0	0.0-2.0	0
	52-60	5.0-15	8.5-9.4	1-5	0	0.0-2.0	5-10
2:			 	 	 	 	
Calladito	- 0-2	5.0-10	7.4-7.8	0	0	0.0-2.0	0
	2-26	5.0-10	7.4-8.4	0	0	0.0-2.0	0
	26-65	5.0-10	7.4-8.4	0-1	0	0.0-2.0	0
Elias	 -  0-1	5.0-15	7.9-9.0	   0-5	   0	0.0-2.0	5-10
DITOS	1-3	15-20	8.5-9.6	5-15	l 0	2.0-4.0	13-30
	3-10	15-20	8.5-9.6	5-15	0   0-1	2.0-4.0	13-30
	10-18	5.0-10	7.9-9.6	5-15	0-1	2.0-4.0	13-30
	18-33	15-20	7.9-8.4	5-15	l 0-1	4.0-8.0	13-30
	33-65	10-25	8.5-9.6	5-15	l 0-1	4.0-8.0	13-30

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth     	Cation-  exchange   capacity	Soil   reaction 	   Calcium  carbonate   	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	рН	Pct	Pct	mmhos/cm	
4.2	ļ						
13: Councelor	0-2	5.0-15	   7.4-7.8	1-5	l l 0	0.0-2.0	1 0
Codiceioi	2-15	5.0-15	7.4-7.8	1-5	1 0	0.0-2.0	1 0
	15-19	10-25	7.4-8.4	1-5	0	0.0-2.0	1-5
	19-42	5.0-10	7.4-8.4	1-5	0	0.0-2.0	1-5
	42-55	15-20	7.4-8.4	1-5	0	0.0-2.0	1-5
	55-65	15-20	7.4-8.4	1-5	0	0.0-2.0	1-5
Calladito	0-3	5.0-10	7.4-7.8	0	0	0.0-2.0	0
	3-37	5.0-10	7.4-8.4	0	0	0.0-2.0	0
	37-65	5.0-10	7.4-8.4	0-1	0	0.0-2.0	0
14:	l I		 	 	 	 	
Councelor	0-4	5.0-10	7.4-7.8	1-5	0	0.0-2.0	0
	4-16	5.0-15	7.4-8.4	1-5	0	0.0-2.0	j o
	16-65	5.0-15	7.4-8.4	1-5	0	0.0-2.0	1-5
Eslendo	0-2	10-15	6.6-7.3	1-5	l l 0	   0.0-2.0	1-5
	2-11	10-20	7.4-8.4	5-10	0-1	2.0-4.0	1-5
	11-20		j	j	j		
Calladito	0-3	5.0-10	   7.4-7.8	   0	   0	0.0-2.0	   0
Callacto	3-41	5.0-10	7.4-8.4	1 0	1 0	0.0-2.0	1 0
	41-65	5.0-10	7.4-8.4	0-1	0	0.0-2.0	0
16:							
10: Starlake	0-3	20-30	8.5-9.6	   5–15	I I 0	2.0-4.0	13-30
	3-12	20-35	8.5-9.6	5-15	0	2.0-4.0	13-30
	12-20	20-25	8.5-9.6	5-15	0-1	4.0-8.0	13-30
	20-54	20-35	8.5-9.6	5-15	0-1	4.0-8.0	13-30
	54-65	20-25	8.5-9.6	5-15	0-1	4.0-8.0	13-30
22:			 	 	 	 	
Querencia	0-2	5.0-15	7.4-8.4	0-1	0-1	0.0-2.0	0
	2-9	10-20	7.4-8.4	5-15	0-1	0.0-2.0	0-1
	9-15	10-20	7.4-8.4	5-15	0-1	0.0-2.0	0-1
	15-65	10-20	7.4-8.4	5-15	0-1	0.0-2.0	0-1
Lavodnas	0-3	5.0-15	7.4-7.8	1-5	1-2	2.0-4.0	0-1
	3-9	10-20	7.4-7.8	1-5	15-25	2.0-4.0	0-1
	9-13	15-25	6.6-7.3	1-5	15-25	2.0-4.0	0-1
	13-20		 			 	
30:			! 	 		! 	
Orlie	0-2	5.0-15	6.6-7.8	0	0	0.0-2.0	0
	2-5	5.0-20	6.6-7.8	0	0	0.0-2.0	0
	5-15	10-25	6.6-7.8	0	0	0.0-2.0	0
	15-36	10-25	7.4-8.4	5-10	0	0.0-2.0	0
	36-50 50-62	10-25 10-25	7.4-8.4	5-10 5-10	0   0	0.0-2.0	0
	30 02	10 23	7.4 0.4	3 10		0.0 2.0	
Tinian	0-3	10-15	7.4-7.8	0-1	0	0.0-2.0	0-1
	3-8	10-20	7.4-7.8	0-1	0	0.0-2.0	0-1
	8-19	20-30	7.4-7.8	0-1	0	0.0-2.0	0-1
	19-24	20-30	7.4-7.8	1-5	0	0.0-2.0	0-1
	24-40						

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum	Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	_  
Nuffel	0-2	30-40	7.9-8.4	5-10	0	0.0-2.0	0-5
ļ	2-12	35-45	7.9-8.4	5-10	0	0.0-2.0	0-5
	12-18	30-40	7.9-8.4	5-10	0	0.0-2.0	0-5
ļ	18-26	35-45	7.9-8.4	5-10	0	0.0-2.0	0-5
	26-65	30-40	7.9-8.4 	5-10 	0 	0.0-2.0	0-5 
12:			 		 	 	
Suwanee	0 - 4	15-30	7.4-7.8	5-10	0	0.0-2.0	0
	4-34	15-25	7.4-7.8	5-10	0	0.0-2.0	0
	34-48	5.0-15	7.4-7.8	5-10	0	0.0-2.0	0
	48-65	15-25	7.4-7.8	5-10	0	0.0-2.0	0
4:			 	! 	 	 	
Suwanee	0-10	15-35	7.4-7.8	5-10	0	0.0-2.0	0
I	10-17	15-35	7.9-8.4	5-10	0	0.0-2.0	0
	17-30	15-25	7.9-8.4	5-10	0	0.0-2.0	0
ļ	30-47	10-25	7.9-8.4	5-10	0	0.0-2.0	0
	47-65	5.0-15	7.9-8.4	5-10	0	0.0-2.0	0
5:			 	! 	 	 	
Nutreeah	0-10	15-30	7.4-8.4	0-1	0	0.0-2.0	0-1
İ	10-16	15-25	7.4-8.4	0-1	0	0.0-2.0	1-5
I	16-24	15-30	7.4-8.4	0-1	0	0.0-2.0	1-5
I	24-40	15-40	7.4-8.4	0-1	0	0.0-4.0	1-5
	40-65	15-40	7.4-8.4	0-1	0	2.0-8.0	1-5
7:			 	 	 	 	
Conchovar	0-3	15-30	7.4-7.8	0-1	0	2.0-4.0	1-5
į	3-9	20-40	7.4-7.8	0-1	0	2.0-4.0	1-5
İ	9-26	15-35	7.4-8.4	0-1	0-1	4.0-8.0	1-5
I	26-36	20-40	7.9-8.4	0	0-1	4.0-8.0	1-5
I	36-54	20-40	7.9-8.4	0	0	2.0-4.0	1-5
	54-65	20-35	7.9-8.4	0	0	0.0-2.0	1-5
9:			 	 	 	 	
Concho	0-4	15-30	6.6-7.8	0-1	0	0.0-2.0	0
į	4-28	15-30	6.6-7.8	0-1	0	0.0-2.0	0
į	28-38	20-35	6.6-7.8	1-5	0	0.0-2.0	0
	38-65	15-30	7.4-8.4	1-5	0	2.0-4.0	0
1:			 	 	 	 	
Kwakina	0-7	5.0-10	7.4-9.0	0-5	0	0.0-2.0	0
i	7-11	5.0-10	7.4-9.0	0-5	0	0.0-2.0	0
j	11-23	5.0-10	7.4-9.0	0-5	0	2.0-8.0	j 0
j	23-33	5.0-15	7.4-9.0	5-10	0	2.0-8.0	j o
	33-65	5.0-10	7.4-9.0	5-10	0	2.0-8.0	0
2:			 	 	 	 	
	0-12	5.0-10	   7.4-7.8	l 0-5	0	0.0-2.0	1 1-5
Zuniven	0-12	J.0 IO					
Zuniven	12-42	10-20	7.4-7.8	0-5	0	0.0-2.0	1-5

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth   	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum	Salinity	Sodium  adsorption   ratio
	In	meq/100 g	рН	Pct	Pct	mmhos/cm	
53:							
Hawaikuh	0-10	15-25	   7.4-7.8	1 1-5	l   0	0.0-2.0	0-2
	10-24	15-30	7.4-9.0	1-5	0	0.0-4.0	0-2
	24-32	15-25	7.4-9.0	5-10	0	0.0-4.0	0-2
	32-42	15-25	7.4-9.0	5-10	0   0	0.0-4.0	0-2
	42-65 	15-30 	7.4-9.0	5-10	U 	0.0-4.0	0-2
54:		i	İ	İ		İ	į
Venadito	0-5	40-50	7.4-7.8	5-10	0	0.0-2.0	0-2
	5-29	45-55	7.4-7.8	5-10	0-2	2.0-4.0	5-10
	29-40	45-55 45-55	7.9-8.4 7.9-8.4	5-10 5-10	0-2 0-2	2.0-4.0	5-10 5-10
	40 05	45 55	7.5 0.4	3 10	02	4.0 0.0	3 10
55:							1
Sparham	0-2	15-30 15-40	7.4-8.4	1-5 1-5	0   0	0.0-2.0	1-5 1-5
	14-18	10-25	7.4-8.4	1-5	l 0	0.0-2.0	1-5
	18-27	15-40	7.4-8.4	1-5	0	0.0-2.0	1-5
	27-31	10-25	7.4-8.4	1-5	0	0.0-2.0	1-5
	31-65	15-40	7.4-8.4	1-5	0-1	2.0-4.0	1-5
60:			 	 	 	 	
Redpen	0-4	10-20	7.4-8.4	5-10	0	0.0-2.0	0
	4-24	10-25	7.4-8.4	5-10	0	0.0-2.0	0
	24-52	10-25	7.4-8.4	5-10	0	0.0-2.0	0
	52-65	10-25	7.4-8.4	5-10	0 	0.0-2.0	0-1
100:			! 		 	 	i
Norkiki	0-3	5.0-10	6.6-7.8	0-5	0	0.0-2.0	0
	3-13	10-20	7.4-7.8	0-5	0	0.0-2.0	0
	13-19	5.0-15	7.4-7.8	0-5 5-15	0   0	0.0-2.0	0   0
	28-40	10-20	/.4-0.4		0 	0.0-2.0 	l
		İ		İ		İ	j
Kimnoli	0-2	5.0-10	6.6-7.3	0-1	0	0.0-2.0	0-2
	2-7 7-14	5.0-15	6.6-7.3 7.4-7.8	0-1 5-15	0   0	0.0-2.0	1-5 1-5
	14-20	10-20	/.4-/.0		0 	0.0-2.0	
		İ	İ	İ		İ	j
110:							
Benally	0-2	5.0-15	7.9-9.0 8.5-9.6	1-5 5-10	0   0-1	0.0-2.0	13-30
	9-25	!	8.5-9.6	5-10	0-1	2.0-4.0	13-30
	25-65	10-20	8.5-9.6	5-10	0-1	2.0-4.0	13-30
m. 1.11							
Fruitland	0-3	0.0-5.0	7.4-7.8	0-1	0   0	0.0-2.0	0
	1	0.0-5.0	7.4-8.4	0-1	0	0.0-2.0	1 0
	19-29	0.0-5.0	7.4-8.4	1-10	0	0.0-2.0	1-5
	29-65	5.0-10	8.4-9.0	1-10	0	0.0-2.0	5-10
111:		1	 	 	 	 	
Yelives	0-2	5.0-15	7.4-8.4	0-5	0	0.0-2.0	0-2
	2-12	5.0-15	7.4-8.4	0-5	0	0.0-2.0	0-2
	12-30	5.0-15	7.4-8.4	0-5	0	0.0-2.0	0-2
	30-41	5.0-10	7.4-8.4	0-5	0	0.0-2.0	0-2
	41-56   56-80	5.0-10   5.0-10	7.4-8.4	0-5 0-5	0   0	0.0-2.0	0-2
		1	, 		, ŭ	, 3.0 2.0	"

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	  meq/100 g	pH	Pct	Pct	mmhos/cm	
115.							
115: Razito	0-4	5.0-10	   7.4-7.8	l l 0-5	l l 0	l   0.0-2.0	I I 0
TWEETOO	4-34	5.0-10	7.4-7.8	0-5	0	0.0-2.0	0
	34-65	5.0-10	7.4-8.4	1-5	0	0.0-2.0	1-5
Shiprock	0-3	5.0-10	   6.6-7.8	   0-5	   0	0.0-2.0	0
	3-15	10-15	7.4-8.4	1-5	0	0.0-2.0	0
	15-37	10-15	7.4-8.4	5-10	0	0.0-2.0	1-5
	37-60	5.0-10	8.5-9.0	5-10 	0 	0.0-2.0	1-10
116:		İ		İ			
Fajada	0-2	15-25	7.9-9.0	1-5	0	0.0-4.0	13-20
	2-6	20-30	8.5-9.6 8.5-9.6	1-5   1-5	0   0	0.0-4.0	13-40
	12-16	20-30	8.5-9.6	1-15	l 0	0.0-4.0	20-40
	16-28	20-30	7.9-9.6	1-15	0-2	4.0-16.0	20-40
	28-40						
Huerfano	0-2	5.0-15	   7.9-8.4	   1-5	   0	0.0-4.0	13-30
	2-17	15-20	7.9-9.6	1-10	0-2	4.0-16.0	13-40
	17-20				 		
Benally	0-2	10-20	7.9-8.4	1-5	0	2.0-4.0	13-30
	2-18	10-20	8.5-9.6	5-10	0	4.0-8.0	13-30
	18-45   45-55	10-20	7.9-9.6	5-10 	0-1 	4.0-8.0	13-30
			İ				
l18: Farb	0-2	   5.0-15	7.4-7.8	   1-5	   0	0.0-2.0	0-2
rain	2-9	5.0-15	7.4-7.8	1-5	l 0	0.0-2.0	0-2
	9-20						
Chipeta	0-2	5.0-15	   7.4-8.4	   5–10	   1-10	   8.0-16.0	5-13
Chipeca	2-12	5.0-15	7.4-9.0	5-10	1-10	8.0-16.0	5-13
	12-20	ļ	j	j			
Rock outcrop	0		 	 	 	 	
20:							
Doak	0-2	5.0-10	7.4-7.8	l 0	l l 0	   0.0-2.0	I I 0
	2-8	10-20	7.4-8.4	0	0	0.0-2.0	0
	8-12	10-20	7.4-8.4	1-5	0	0.0-2.0	0
	12-40	10-20	7.4-8.4	5-10	0	0.0-2.0	1-5
	40-65 	5.0-15	7.4-8.4	5-10 	0 	0.0-2.0	1-5
Shiprock	0-4	5.0-10	6.6-8.4	0-1	0	0.0-2.0	0
	4-18	10-15	7.4-8.4	1-5	0	0.0-2.0	0
	18-37   37-65	10-15	7.4-8.4	5-10	0   0	0.0-2.0	1-5
	37-03	5.0-10	8.5-9.0	5-10 	"	0.0-2.0	1-10
121:							
Badland	0-2	15-25	7.8-8.6	0-5	1-5 	2.0-4.0	1-10
	4-40 	1	 		I - I	 	

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth     	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	_  
122:			 	 	[ [	 	
Farb	l   0-2	5.0-15	7.9-8.4	   5–10	l I 0	   0.0-2.0	0-2
	2-5	5.0-15	7.9-8.4	5-10	0	0.0-2.0	0-2
	5-20	j			ļ		j
Rock outcrop	   0		 		 	 	
125:	 		 	 	 	 	
Sanfeco	0-2	5.0-15	7.4-8.4	3-5	0	0.0-2.0	0-2
	2-10	15-25	7.4-8.4	5-10	0	0.0-2.0	2-5
	10-27	25-35	7.4-8.4	5-10	0	0.0-2.0	2-5
	27-35	15-35	7.4-8.4	5-10	0	0.0-2.0	2-5
	35-39	10-25	7.4-8.4	5-10	0	0.0-2.0	2-5
	39-65 	5.0-10	7.4-8.4	5–15 	0 	0.0-4.0	2-5
130:	İ	İ			İ	İ	i
Chipeta	0-3	5.0-10	7.9-8.4	0-5	1-5	0.0-2.0	0
	3-6	15-35	7.9-8.4	0-5	1-5	0.0-4.0	0-2
	6-14						
	14-20 		 	 	 	 	
Badlands	0-2	15-25	7.8-8.6	1-5	1-5	2.0-4.0	1-5
	2-20	15-25	7.8-8.6	1-5	1-5	2.0-4.0	1-5
Moncisco	0-3	10-15	7.4-8.4	1-5	0	l   0	0
	3-13	5.0-15	7.4-8.4	5-20	0	4.0-8.0	0
	13-27	0.0-0.0	7.4-8.4	0-5	0-1	0	0
	27-39	0.0-0.0	7.4-8.4	0-5	0-1	0	0
	39-59	0.0-0.0	7.4-8.4	0-5	0	0	0
150:	 					 	
Riverwash	0-10	0.0-1.0	6.6-7.3	0	0	0.0-2.0	0-2
	10-80	0.0-1.0	6.6-7.3	0	0	0.0-2.0	0-2
Escawetter	   0-2	0.0-5.0	7.4-7.8	0-1	0	0.0-2.0	0
	2-8	0.0-5.0	7.4-7.8	0-1	0	0.0-2.0	0
	8-25	0.0-5.0	7.4-7.8	0-1	0	0.0-2.0	0
	25-32	0.0-5.0	7.9-8.4	0-1	0	0.0-4.0	0
	32-48	0.0-5.0	7.9-8.4	0-1	0	0.0-2.0	0
	48-65 	0.0-5.0	7.9-8.4	0-1	0	0.0-2.0	0
160:						 	
Escawetter	0-1	0.0-5.0		0-5	0-1	0.0-4.0	1-5
	1-7	0.0-5.0	7.4-8.4	0-5	0-1	0.0-4.0	1-5
	7-16	0.0-5.0	7.4-8.4	0-5	0-1	0.0-4.0	1-5
	16-22	0.0-5.0	7.9-8.4	0-5	0-1	0.0-4.0	1-5
	22-52	0.0-5.0	7.9-8.4	0-5 0-5	0-1   0-1	0.0-4.0	1-5   1-5
	52-70		7.5 0.4	0.5		0.0-4.0	1 7-2
Riverwash	0-80	1.0-3.0	7.9-9.0	0-5	0-1	2.0-4.0	1-5
Razito	   0-1	0.0-5.0	7.4-8.4	0-1	   0-1	0.0-2.0	0-1
	1-70	0.0-5.0	7.4-8.4	0-1	0-1	0.0-2.0	0-1

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum     	Salinity     	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
205:							
Penistaja	0-3	5.0-15	6.6-7.8	0-1	0   0	0.0-2.0	0
	3-19   19-65	10-20	6.6-8.4 7.4-8.4	0-1 5-10	0   0	0.0-2.0	0
	1 19-03	1 3.0-20	7.4-0.4	] 3-10	U	0.0-2.0 	
Tintero	0-4	5.0-10	6.6-7.3	0-5	0	l 0	0
	4-16	5.0-15	7.4-7.8	1-5	0	j 0	0
	16-48	5.0-15	7.4-7.8	5-10	0	0.0-2.0	0
	48-65	1.0-1.0	7.4-7.8	5-10	0	0.0-2.0	0
	ļ						
208:			7 4 0 4				
Marianolake	0-2   2-8	5.0-15 5.0-15	7.4-8.4	0-5 0-5	0-1	0.0-2.0	0   0-1
	8-14	15-25	7.4-8.4	0-5 0-5	0-1	0.0-2.0	0-1
	14-24	5.0-15	7.4-8.4	0-5 0-5	0-1	0.0-2.0	0-1
	24-39	5.0-15	7.9-8.4	0-5	0-1	0.0-2.0	0-1
	39-70	0.0-5.0	7.9-8.4	0-5	0-1	0.0-2.0	0-1
							İ
210:	Ì	İ	ĺ	ĺ	ĺ	ĺ	İ
Marianolake	0-5	5.0-15	7.4-8.4	0-5	0	0.0-2.0	0
	5-11	10-25	7.4-8.4	5-10	0	0.0-2.0	0
	11-47	10-25	7.4-8.4	5-10	0	0.0-2.0	0
	47-65	5.0-15	7.4-8.4	5-10	0	0.0-2.0	0
Skyvillage	0-2	5.0-10	7.4-8.4	l 0-5	l l 0	l   0.0-2.0	I I 0
22 - 1 - 1 - 2 - 2	2-5	5.0-10	7.4-8.4	5-10	0	0.0-2.0	0
	5-9	10-20	7.4-8.4	5-10	0	0.0-2.0	0
	9-15	10-20	7.4-8.4	5-10	0	0.0-2.0	j o
	15-20						
04.0							
212: Rehobeth	0-2	20-30	   7.9-9.0	   1-5	   1-10	   0.0-2.0	1-5
Reliobetii	2-5	20-30	7.9-9.0	1-5	1-10	0.0-2.0	1-5
	5-12	20-30	7.9-9.0	1-5	1-10	0.0-2.0	1-5
	12-18	20-40	7.9-9.0	1-5	5-10	0.0-2.0	5-13
	18-32	20-40	7.9-9.0	1-5	5-10	0.0-2.0	5-14
	32-80	20-40	7.9-9.0	1-5	1-5	2.0-8.0	5-14
215:							
Viuda	0-3	2.0-7.0	6.6-7.3	0	0	0.0-2.0	0-2
	3-15	2.0-20	7.9-8.4	0	0	0.0-2.0	0-2
	15-17   17-20	2.0-10	7.9-8.4	1-15 	0	0.0-2.0	0-2
	17 20					 	İ
Penistaja	0-2	5.0-15	6.6-7.8	0-1	0	0.0-2.0	0
	2-22	10-20	6.6-8.4	0-1	0	0.0-2.0	0
	22-65	5.0-20	7.4-8.4	1-10	0	0.0-2.0	0
Rock outcrop	   0		 	 	 	 	
	İ						
220:							
Hagerwest	0-2	5.0-15	6.6-7.8	0	0	0.0-2.0	0
	2-13	10-20	6.6-7.8	0	0	0.0-2.0	0
	13-19	10-20	7.4-8.4	1-10	0	0.0-2.0	0
	19-35   35-40	5.0-15	7.4-8.4	1-10 	0	0.0-2.0	0
	33-40						!

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth   	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum	Salinity	Sodium  adsorption   ratio
	In	meq/100 g	Hq	Pct	Pct	mmhos/cm	_
220:	 		 	 	 	 	
Bond	0-2	5.0-15	6.6-7.8	0-1	0	0.0-2.0	0
	2-5	5.0-15	6.6-8.4	0-5	0	0.0-2.0	0
	5-14	10-20	6.6-8.4	1-5	0	0.0-2.0	0
	14-20						
225:	 		 	 	 	 	
Aquima	0-2	35-40	7.4-8.4	1-5	I 0	0.0-2.0	0-2
4.	2-11	35-40	7.4-8.4	5-10	0	0.0-2.0	0-2
	11-17	35-45	7.4-9.0	5-10	l 0	0.0-2.0	0-2
	17-45	30-50	7.4-9.0	1-5	l 0	0.0-2.0	5-10
	49-65	30-40	7.4-9.0	5-10	0	0.0-2.0	0-2
Hawaikuh	0-3	5.0-20	   7.4-7.8	   1-5	   0	0.0-2.0	0-2
iidwdi.Kuii	3-12	15-25	7.4-7.8	1-5	l 0	0.0-2.0	0-2
	12-29	15-25	7.4-8.4	5-10	l 0		0-2
	29-39	10-20	7.4-8.4	!	l 0	0.0-4.0	!
		1	1	5-10	l 0	0.0-4.0	0-2
	39-54 54-65	5.0-15   15-25	7.4-8.4	5-10 5-10	0	0.0-4.0	0-2
	į	į	į	į	İ	į	į
230:							
Sparank	0-2	15-30	7.4-8.4	1-5	0	0.0-2.0	1-5
	2-25	15-30	7.4-8.4	1-5	0	0.0-4.0	1-5
	25-65	20-40	7.4-8.4	1-5	0 	0.0-4.0	1-5
San Mateo	0-2	15-30	7.4-8.4	1-5	0	0.0-2.0	1-5
	2-15	10-25	7.4-8.4	1-5	0	0.0-2.0	5-10
	15-30	10-20	7.4-9.0	1-5	0	0.0-2.0	5-10
	30-39	10-25	7.4-9.0	1-5	0	2.0-4.0	5-10
	39-45	5.0-15	7.4-9.0	1-5	0	2.0-4.0	5-10
	45-65	10-25	7.4-9.0	1-5	0	2.0-4.0	5-10
Zia	0-3	5.0-15	   7.4-8.4	   1-5	   0	   0.0-2.0	l 0-2
220	3-12	5.0-15	7.4-8.4	1-5	l 0	0.0-2.0	0-2
	12-20	5.0-15	7.4-8.4	1-5	l 0	0.0-2.0	0-2
	20-28	5.0-15	7.4-8.4	1-5	l 0	0.0-2.0	0-2
	28-70	5.0-15	7.4-8.4	1-5	0	0.0-2.0	0-2
225.					 	 	
235: Notal	I I 0 1	1 10-20	10506	   1 E	l I 0	1 0040	
MOCGT	0-1	10-20	8.5-9.6	1-5	l 0	0.0-4.0	5-13
	1-3	!	8.5-9.6	1-5		2.0-16.0	5-30
	3-13	10-20	8.5-9.6	1-5	0	2.0-16.0	8-30
	13-27	10-20	7.9-9.0	1-5	0-1	2.0-16.0	8-30
	27-44	20-40	7.9-8.4 8.5-9.0	1-5   1-5	0-1 0-1	2.0-16.0	8-30 8-30
	į	İ	İ	İ		İ	İ
Hamburn	0-3	5.0-10	7.4-8.4	1-5	0	0.0-2.0	1-5
	3-8	5.0-10	7.4-9.0	1-5	0-1	0.0-2.0	1-5
	8-29	5.0-10	7.4-9.0	1-5	0-1	2.0-4.0	1-5
	29-52	5.0-10	7.4-9.0	1-5	0-1	2.0-4.0	1-5
	52-70	5.0-10	7.4-9.0	1-5	0-1	2.0-4.0	1-5

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	   Depth   	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	  meg/100 g	pH	Pct	Pct	mmhos/cm	_l
	İ				İ		j
240:		Ţ		Į.			
Breadsprings	0-3	5.0-10	7.4-8.4	0-1	0	0.0-2.0	0
	3-7	5.0-10	7.4-8.4	0-1	0	0.0-2.0	0-2
	7-14 14-22	15-25   5.0-15	7.4-8.4	0-1	0	0.0-2.0	0-2
	22-29	5.0-15	7.4-8.4	0-5 1-5	0-2 0-2	0.0-2.0	0-2
	29-36	5.0-10	7.4-8.4	1-15	0-2	0.0-2.0	0-5
	36-70	5.0-10	7.4-8.4	1-15	0-2	0.0-2.0	0-5
Nahodish	0-1	5.0-15	   7.4-7.8	0-1	0-2	0.0-2.0	1-5
	1-9	10-15	7.4-8.4	0-1	0-2	0.0-2.0	1-5
	9-17	15-20	7.9-9.0	1-5	0-2	0.0-2.0	1-10
	17-31	15-20	7.9-9.0	1-10	1-5	0.0-2.0	1-10
	31-36	15-25	7.9-9.0	1-10	1-10	0.0-2.0	1-10
	36-58	5.0-15	7.9-9.0	1-10	1-10	2.0-4.0	1-10
	58–80 	15-35	7.9-9.0	1-10 	1-10 	2.0-4.0	1-10
241:	į	į	į	į	į	į	į
Mentmore	0-1	5.0-10	7.4-7.8	0-2	0	0.0-2.0	0
	1-2 2-7	15-25 10-25	7.4-7.8	0-2	0   0	0.0-2.0	0
	7-13	15-25	7.4-7.8	2-10	I 0	0.0-2.0	1 0
	13-22	15-25	7.9-8.4	2-10	l 0	0.0-2.0	1 0
	22-70	15-25	7.9-8.4	2-10	0	0.0-2.0	0
242:	 		 	 	 	 	
Gish	0-3	15-25	7.4-8.4	0	0	0.0-2.0	0
	3-13	15-35	7.4-8.4	0	0	0.0-2.0	0
	13-27	15-35	7.4-8.4	0-10	0-2	0.0-2.0	0-2
	27-55	15-35	7.4-7.8	0-10	0-2	0.0-2.0	0-2
	55-64	15-25	7.4-7.8	0-10	0-2	0.0-2.0	0-2
	64-70 	15-35	7.4-7.8	0-10	0-2 	0.0-2.0	0-2
Mentmore	0-2	5.0-15	7.4-7.8	0-2	0	0.0-2.0	0
	2-4	15-25	7.4-8.4	0-2	0	0.0-2.0	0
	4-13	15-25	7.4-8.4	0-2	0	0.0-2.0	0
	13-24	15-25	7.4-8.4	0-2	0	0.0-2.0	0
	24-44	15-25 15-25	7.4-8.4	1-5 1-5	0-2 0-2	0.0-2.0	0   0
	62-70	15-25	7.4-8.4	0-5	0-2	0.0-2.0	0
244:	 		 		 	 	
Buckle	0-4	5.0-15	7.4-7.8	0	0	I I 0	0
-	4-14	10-25	7.4-7.8	0	0	0	0
	14-22	10-25	7.4-7.8	0	0	0	0
	22-34	10-25	7.4-8.4	0	0	0	0
	34-48	15-30	7.4-8.4	0-5	0	0.0-2.0	0
	48-62	15-30	7.4-8.4	0-5	0-1	0.0-2.0	0
	62-75 	15-30	7.4-8.4	0-5	0-1 	0.0-2.0	0
245:	i	İ	İ	i	İ		
Buckle	0-1	0.0-5.0	6.6-7.8	0-1	0	0.0-2.0	0
	1-7	15-25	6.6-7.8	0-1	0	0.0-2.0	0
	7-25	10-25	7.4-8.4	5-10	0	0.0-2.0	0
	25-35	15-25	7.4-8.4	5-10 5-10	0   0	0.0-2.0	0
	1 32-80	5.0-15	7.4-8.4	5-10	l O	0.0-2.0	0

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	   Depth   	   Cation-  exchange   capacity	   Soil   reaction 	   Calcium  carbonate 	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
	<u> </u>		<u> </u>			!	!
245:							
Gapmesa	0-1   1-9	5.0-10	7.4-7.8	0 1 0	0   0	0 I 0	0
	9-20	10-20	7.9-8.4	1 1-5	l 0	0.0-2.0	1 0
	20-31	15-25	7.9-8.4	1-5	0-1	0.0-2.0	0
	31-40						j
Barboncito	0-2	0.0-10	7.4-7.8	0-1	0	0.0-2.0	0
	2-6 6-11	10-25	7.4-8.4	1-5   1-5	0   0	0.0-2.0	0
	11-20						
	İ	İ	İ	İ			İ
250:							
Hospah	0-3	15-25	7.9-8.4	1-5	1-5	0.0-4.0	1-5
	3-15 15-20	25-35	8.5-9.0	1-5 	1-5 	0.0-4.0	5-13
	13-20		 	 	 	 	
Skyvillage	0-1	5.0-10	7.4-8.4	0-5	0	0.0-2.0	0
	1-5	5.0-10	7.4-8.4	5-10	0	0.0-2.0	0
	5-8	10-20	7.4-8.4	5-10	0	0.0-2.0	0
	8-20						
Rock outcrop	   0		   	   	   	   	
255:	 		 	 	 	 	
Farview	0-1	5.0-10	7.4-8.4	0-1	0	0	0
	1-10	5.0-15	7.4-8.4	0-1	0	0	0
	10-17	5.0-15	7.8-8.4	1-10	0	0	0
	17-20						
Rock outcrop	   0		 	 	 	 	
258:	 	1	 	 	 	 	
Eagleye	l 0-2	15-25	7.4-7.8	l 0	l 0-2	0.0-2.0	0-1
5 1	2-10	15-30	7.4-7.8	0	0-2	0.0-2.0	0-1
	10-20						
		- 0 15					
Atchee	0-2 2-12	5.0-15	7.4-8.4	0-1 0-1	0   0	0.0-2.0	0   0
	12-14	15-20	7.4-8.4	0-1	l 0	0.0-2.0	l 0-1
	14-20						
	j	İ	j	j	İ	j	j
Rock outcrop	0						
262					İ		
260: Quarries and pits	l l 0		 	 	 	 	 
Zamilion and bion							
261: Coal mine lands	   		   	   	 	 	j 
						!	!
265: Uranium mined lands	   0		 		 		
OTAITUM MITHEO TANOS	0					===	

Table 16.--Chemical Properties of the Soils--Continued

270: Alesna	In   In 	meq/100 g	!		I	1 	ratio
	 		pH	Pct	Pct	mmhos/cm	
Alesna			 	 	 	 	
	0-1	5.0-15	7.4-8.4	0-5	0	0.0-2.0	1-5
	1-10	15-30	7.4-8.4	1-5	0	0.0-2.0	1-5
	10-20	15-35	7.9-9.0	5-40	0	0.0-4.0	1-5
	20-26	15-35	7.9-9.0	5-40	0	0.0-4.0	1-5
	26-52	15-35	7.9-9.0	15-40	0	0.0-4.0	1-5
	52-60 				 	 	
Rock outcrop	0		 		   	   	
275:					 	 	
Eldado	0-2	5.0-10	7.4-7.8	1-5	0	0.0-2.0	0-2
	2-9	10-20	7.4-8.4	5-15	0	0.0-2.0	0-2
	9-13	10-20	7.9-8.4	15-40	0	0.0-2.0	0-2
	13-25	10-20	7.9-8.4	15-55	0	0.0-2.0	0-2
	25-43	1.0-1.0	7.9-9.0	5-55	0	0.0-2.0	0-2
	43-72	2.0-3.0	7.4-8.4	0-5	0	0.0-2.0	0-2
280:			 	 	 	 	
Azabache	0-1	15-25	7.4-8.4	0	0	0.0-4.0	10-20
	1-5	20-30	7.9-9.0	0-5	0	4.0-16.0	20-30
	5-17	10-20	8.5-9.8	5-15	0-1	4.0-16.0	20-30
	17-32	10-20	8.5-9.8	5-15	0-1	4.0-16.0	20-30
	32-50	10-20	8.5-9.8	0-5	0-1	4.0-16.0	20-30
	50-62	10-20	8.5-9.8	0-5	0-1	4.0-16.0	20-30
290:			 	 	 	 	
Rock outcrop	0						
Westmion	0-2	10-25	   7.4-8.4	1-5	l   0	   0.0-2.0	1-5
	2-14	15-35	7.4-8.4	1-5	0-1	0.0-2.0	1-5
	14-20	ļ					
Skyvillage	0-2	5.0-15	   7.4-8.4	1-5	l   0	   0.0-2.0	0
	2-13	5.0-15	7.4-8.4	5-15	0	0.0-2.0	0
	13-20	ļ					
291:	 		 	 	 	 	
Rock outcrop	0	Ì					
Eagleye	0-2	15-30	   6.6-7.8	0	   0	0.0-2.0	0
<u> </u>	2-7	15-30	6.6-7.8	0	0-2	0.0-2.0	0
	7-13	15-30	6.6-7.8	0	0-2	0.0-2.0	0
	13-20						
Atchee	0-2	   5.0-15	   7.4-8.4	0-5	   0	   0.0-2.0	0
	2-8	5.0-15	7.4-8.4	0-5	l 0	0.0-2.0	1 0
	8-20			l	 		l

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-  exchange   capacity	Soil   reaction 	   Calcium  carbonate   	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	-    In	meq/100 g	pH	Pct	Pct	mmhos/cm	
200		1					
300: Regracic	 -  0-2	10-20	   6.6-7.3	l l 0-5	l l 0	   0.0-2.0	l l 0
negracie	2-31	15-35	6.6-7.8	5-10	0	0.0-2.0	0
	31-45	15-30	7.4-8.4	15-40	0	0.0-2.0	0
	45-50	10-25	7.4-8.4	5-15	0	0.0-2.0	0
	50-60	10-20	7.4-8.4	5-10	0	0.0-2.0	0
	60-80	5.0-15	7.4-7.8	0-5	0	0.0-2.0	0
305:		1		! 	 	 	
Celavar	- 0-2	5.0-10	6.6-7.3	0-5	0	0.0-2.0	0
	2-24	10-15	7.4-7.8	0-5	0	0.0-2.0	0
	24-31	10-15	7.4-7.8	0-5 l	0 I	0.0-2.0	0
	31-40			 	 		
Atarque	- 0-3	5.0-10	7.4-7.8	0-1	0	0.0-2.0	0
	3-14	10-20	7.4-7.8	0-5	0	0.0-2.0	0
	14-20			 	 		
308:			 	 	 	 	1
Fikel	- 0-3	15-25	6.6-7.8	0-5	0	0.0-2.0	0-1
	3-14	20-35	6.6-7.8	0-5	0	0.0-2.0	0-1
	14-32	20-35	7.4-7.8	0-5	0	0.0-2.0	0-1
	32-50 50-65	10-20 15-20	7.9-8.4	5-10 5-10	0   0	0.0-2.0	0-1
	65-70	10-20	7.9-8.4	5-10 5-10	l 0	0.0-2.0	0-1
	i	İ	İ	İ	İ	İ	İ
Venzuni	-  0-7	40-60	7.4-8.4	1-10	0	0.0-2.0	1-5
	7-22	40-60	7.4-8.4	1-10   1-10	0   0	0.0-2.0	1-5 1 1-5
	42-56	25-50	7.4-8.4	1-10	l 0	0.0-2.0	1-5
	56-75	25-50	7.9-8.4	1-10	0	0.0-2.0	1-5
	İ	İ	į	ĺ	ĺ		į
310: Parkelei	 -  0-2	5.0-15	   6.6-7.8	   0-1	   0	   0.0-2.0	   0
Parkerer	-	10-25	6.6-8.4	0-1 0-1	I 0	0.0-2.0	1 0
	21-55	10-25	6.6-8.4	5-10	0	0.0-2.0	0
	55-65	15-25	6.6-8.4	5-10	0	0.0-2.0	0
312:					l I		
Bluewater	-  0-2	1 15-25	   7.4-7.8	   5–15	l I 0	l   0.0-2.0	I I 0
	2-11	20-30	7.9-8.4	5-15	0-1	0.0-2.0	0
	11-28	15-25	7.9-8.4	15-20	0-1	0.0-2.0	0
	28-50	20-30	7.9-8.4	15-30	0-1	0.0-2.0	0
	50-70	20-35	7.9-8.4	10-30	0-1	0.0-2.0	0
	70-80 	20-30	7.9-8.4	15-30 	0-1 	0.0-2.0	0
315:		i	İ			İ	
Flugle	0-3	5.0-20	7.4-8.4	0-5	0	0.0-2.0	0
	3-10	10-25	7.4-8.4	0-5	0	0.0-2.0	0
	10-28   28-65	10-25 5.0-15	7.4-8.4	0-5 5-10	0   0	0.0-2.0	0
	20-03	1 2.0-13	/.= 0.4	1 2.10		0.0-2.0	
Fragua	- 0-2	5.0-10	6.6-8.4	0-1	0	0.0-2.0	0
	2-19	5.0-15	6.6-8.4	5-10	0	0.0-2.0	0
	19-65	5.0-15	6.6-8.4	5-10	0	0.0-2.0	0

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth   	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum	Salinity	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	į
316:					  -	 	
Royosa	0-2	5.0-10	6.6-7.3	0	l 0	0.0-2.0	0
-4	2-6	5.0-10	6.6-7.3	0	0	0.0-2.0	0
	6-65	5.0-10	6.6-7.8	0	0	0.0-2.0	0
317:				 	l I		
Highdye	0-3	5.0-15	6.6-7.3	0	l   0	I I 0	0
	3-5	15-25	6.6-7.3	0	0	0	0
	5-12	20-30	6.6-7.3	0	0	0	0
	12-20						
Evpark	I 0-5	5.0-20	6.6-7.3	   0	l I 0	   0	   0
± '	5-10	10-25	6.6-7.3	0	0	0	0
	10-24	10-25	6.6-7.8	0-10	0	0.0-2.0	0
	24-40		ļ				j
Bryway	0-4	5.0-15	   6.6-7.8	   0	   0	   0	   0
2 ··· 2	4-10	15-35	6.6-7.8	0	0	0	0
	10-23	15-35	7.4-7.8	0-5	0	0	0
	23-40						
320:	l I		 	 	 	 	1
Parkelei	0-4	5.0-15	6.6-7.8	0	0	0	0
	4-18	10-25	6.6-8.4	0-1	0	0.0-2.0	0
	18-28	10-25	6.6-8.4	0-1	0	0.0-2.0	0
	28-39	10-25	6.6-8.4	0-1	0	0.0-2.0	0
	39-52	10-25	6.6-8.4	2-10	0	0.0-2.0	0
	52-70 	5.0-15	6.6-8.4	2-10	0 	0.0-2.0	0
Fraguni	0-4	5.0-10	6.6-7.8	0-1	0	0	0
	4-20	5.0-10	6.6-7.8	0-1	0	0	0
	20-46	5.0-10	6.6-7.8	0-1	0	0	0
	46-58   58-70	10-20	6.6-7.8	0-1	0   0	0.0-2.0	0   0
	30-70	3.0-10	0.0-7.0	0-1	0 	0.0-2.0 	
325:	į	į	į	İ	İ	İ	i
Venzuni	0-2	20-40	7.4-8.4	5-10	0	0.0-2.0	1-5
	2-12	20-40	7.4-8.4	5-10	0	0.0-2.0	1-5
	12-46   46-65	25-50	7.4-8.4	5-10 5-10	0   0	0.0-2.0	1-5   1-5
332:							
Evpark	0-2	5.0-15	6.6-7.3	0	0	0	0
	2-9 9-36	15-25 10-20	6.6-7.3	0   0	0   0	0 I 0	0   0
	36-40						
	İ						
Arabrab	0-2	5.0-15	7.4-7.8	0	0	0	0
	2-7 7-12	10-20 15-25	7.4-7.8	0-5	0   0	0 0.0-2.0	0
	12-17	15-25	7.4-7.8	1-5	l 0	0.0-2.0	0
	17-20						
225.						 	
335: Venadito	0-3	40-50	7.4-8.4	   5-10	   0-1	0.0-2.0	0-2
	3-30	45-55	7.4-8.4	5-10	0-1	2.0-4.0	5-10
	30-65	45-55	7.4-8.4	5-10	0-1	2.0-4.0	5-10
	i	1	I	I			İ

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth     	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum	Salinity	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	-  
	ĺ		ĺ	ĺ		ĺ	j
36:							
Nuffel	0-2	30-40	7.9-8.4	5-10	0	0.0-2.0	0
	2-10	20-30	7.9-8.4	5-10	0	0.0-2.0	0
	10-17   17-20	25-45	7.9-8.4	5-10 5-10	0   0	0.0-2.0	0   0
	20-47	35-45	7.9-8.4	5-10	l 0	0.0-2.0	1 0
	47-65	50-60	7.9-8.4	5-10	0	0.0-2.0	0
Venadito	0-2	40-60	7.4-8.4	   5-10	   0	0.0-4.0	1 1-5
Verladiteo	2-9	40-60	7.4-8.4	5-10	l 0	0.0-4.0	1-5
	9-11	40-60	7.4-8.4	5-10	l 0	0.0-4.0	5-10
	11-65	40-60	7.4-8.4	5-10	0	0.0-4.0	5-10
38:	 		 	 	 	 	
Zyme	0-3	15-25	7.9-8.4	0-5	0-2	0.0-2.0	0
	3-8	15-35	7.9-8.4	1-5	0-2	0.0-2.0	0
	8-15	15-35	7.9-8.4	1-5	0-2	0.0-2.0	0
	15-20				 	 	
Lockerby	0-1	15-25	7.8-8.4	1-5	0-1	0.0-2.0	0
	1-11	15-25	7.8-8.4	1-5	0-1	0.0-2.0	0-1
	11-15	15-25	7.4-8.4	1-5	0-1	0.0-2.0	0-1
	15-26   26-40	15-25	7.4-8.4	0 I	0-1 	0.0-4.0	0-1
45		į	İ				İ
45: Rock outcrop	   0		 	 	 		
		15.05					j
Tuces	0-1	15-25	7.4-7.8	2-5	0   0	0.0-2.0	0-1
	1-4	20-30	7.4-8.4	5-10 5-10	l 0	0.0-2.0	0-1
	24-40	20-30	7.4-0.4			0.0-2.0	
Toldohn	0-4	15-30	6.6-7.8	   0-5	   0	   0	0-2
10100111	4-11	15-35	6.6-7.8	0-5	l 0	l 0	0-2
	11-20						
Vessilla	   0-2	5.0-15	   6.6-8.4	   1-5	   0	   0	0
	2-11	5.0-15	6.6-8.4	1-5	0	0	0
	11-20			ļ	 	 I	j
Rock outcrop	0		ļ 	ļ 			
51:	[ [		 	 	 	 	
Rock outcrop	0						j
Vessilla	0-5	5.0-15	6.6-8.4	   1-5	   0	   0	0
	5-20						
52:	 		 	 	 	 	
Zia	0-3	5.0-15	7.4-8.4	1-5	0	0.0-2.0	0-2
	3-31	5.0-15	7.4-8.4	1-5	0	0.0-2.0	0-2
	31-65	5.0-15	7.4-8.4	1-5	l 0	0.0-2.0	0-2

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	   Depth     	Cation-  exchange   capacity	   Soil   reaction 	   Calcium  carbonate 	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	   pH	Pct	Pct	mmhos/cm	
252							
353: Mido	   0-3	3.0-5.0	   7.9-8.4	0-1	l l 0	l l 0	1 0
inao	3-65	2.0-5.0	7.9-8.4	0-1	0	0	0
354:	 		 	 	 		
Knifehill	0-2	10-20	6.6-7.8	0	0	0.0-2.0	0
	2-6	15-25	6.6-7.8	0	0	0.0-2.0	0
	6-11   11-26	15-25	6.6-7.8   6.6-7.8	0   0	0   0	0.0-2.0	0   0
	26-35	20-30	7.4-7.8	1-15	l 0	0.0-2.0	1 0
	35-65	20-30	7.4-7.8	1-15	0	0.0-2.0	0
355:	 		 	 	 		
Rizno	0-3	5.0-15	7.4-7.8	1-5	0	0.0-2.0	0
	3-8	5.0-15	7.4-7.8	1-5 	0	0.0-2.0	0
Tekapo	   0-2	10-25	   7.4-7.8	1-5	l l 0	   0.0-2.0	I I 0
10.00	2-10	15-30	7.4-7.8	1-5	0	0.0-2.0	0
	10-20		 			 I	
Rock outcrop	   0 		   	   	   	   === 	
357:	į	İ	İ	İ		İ	İ
Heshotauthla	0-3	20-30	7.9-9.0	0-5	0	0.0-2.0	10-20
	3-18	20-30	8.5-9.0	0-5	0-1	2.0-4.0	20-40
	18-65 	25-35	7.9-9.0 	1-5 	0-1 	4.0-16.0 	15-35
360:	į	į		į		İ	į
Hosta	0-2	5.0-20	6.6-7.8	0	0	0.0-2.0	0
	2-4	15-25   15-25	7.4-8.4	0 1 1-5	0   0	0.0-2.0	0 0-2
	24-51	15-25	7.4-8.4	1-5	l 0	0.0-2.0	0-2
	51-65	10-20	7.4-8.4	1-5	0	0.0-2.0	0-2
Concho	0-1	15-30	   6.6-7.8	0	   0	0.0-2.0	0
	1-5	20-40	6.6-7.8	0	0	0.0-2.0	0
	5-32	15-35	7.4-8.4	0	0	0.0-2.0	0-2
	32-51 51-65	15-35 15-35	7.4-8.4	1-5   1-5	0   0	2.0-4.0	0-2
261.	İ	į	 	į	 	 	į
361: Monpark	0-4	15-35	   7.4-8.4	1-10	I I 0	   0.0-2.0	0-2
	4-7	20-35	7.4-9.0	1-10	0	0.0-4.0	2-5
	7-27	20-35	7.4-9.0	1-10	0	0.0-4.0	2-5
	27-40		 		 	 	
365:			 		 	 	
Vessilla	0-2	5.0-15	6.6-8.4	1-5	0	0.0-2.0	0
	2-6	5.0-10	6.6-8.4	5-15	0	0.0-2.0	0
	6-15   15-20	5.0-10	6.6-8.4 	5-15 	0 	0.0-2.0	0
Doub out our	İ			į			į
Rock outcrop	0 		 	 	 	 	

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	   Depth     	Cation-  exchange   capacity	   Soil   reaction 	   Calcium  carbonate   	   Gypsum     	   Salinity     	Sodium  adsorption   ratio
	In	meq/100 g	рН	Pct	Pct	mmhos/cm	
366:							
Bosonoak	0-2   2-5   5-28   28-40   40-63   63-80	5.0-15   10-25   10-25   5.0-15   5.0-15	7.4-8.4 7.4-8.4 7.9-8.4 7.9-8.4 7.9-8.4 7.9-8.4	0-1   0-1   1-5   1-5   1-10   1-10		0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
367:	 		 	 	 	 	
Chunkmonk	0-1 1-4 4-8 8-10 10-20	5.0-10   5.0-15   5.0-15   5.0-15 	7.4-7.8 7.9-8.4 7.9-8.4 7.9-8.4	0-5 0-5 5-40 15-40	0   0   0   0 	0.0-2.0   0.0-2.0   0.0-2.0   0.0-2.0 	0 0 0 0 0 0 0 0 0
368:	 		 	 	 	 	
Simitarq	0-1   1-6   6-14   14-20	2.0-10   10-20   20-30 	6.6-7.8   6.6-7.8   7.4-7.8 	0   0   0 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Celavar	   0-1			   ===	 		
	1-2   2-11   11-27   27-31   31-40	5.0-10   10-15   10-15   15-20 	6.6-7.8   7.4-7.8   7.4-7.8   7.4-7.8 	0   0   1-5   1-5 	0   0   0   0 	0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
375:	 		 	 	 	 	
Todest	0-1   1-3   3-10   10-18   18-25   25-40	5.0-10   5.0-10   10-15   10-15   5.0-10 	7.4-7.8 7.4-7.8 7.4-7.8 7.9-8.4 7.9-8.4	5-15   1-5   5-15   15-40   40-80 	0   0   0   0   0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Shadilto	0-1   1-9   9-13   13-15   15-20	2.0-10   2.0-10   2.0-10   2.0-10   2.0-10	7.9-8.4 7.9-8.4 7.9-8.4 7.9-8.4	10-40   40-80   40-80   40-80 	0   0   0   0 	0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
376:	 		 	 	 	 	
Todest	0-1   1-8   8-14   14-24   24-40	5.0-10   10-15   10-15   10-15 	7.4-7.8 7.9-8.4 7.9-8.4 7.9-8.4	5-15   10-15   15-40   40-80 	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
380:							
Berryhill	0-2 2-12 12-26 26-39 39-70	20-30 20-40 20-40 20-40 20-40 20-40	7.9-9.0 7.9-9.0 7.9-9.0 7.9-9.0 7.9-9.0	1-10   1-10   1-10   1-10   1-10	0-1 0-1 10-35 2-8 2-8	0.0-2.0 2.0-4.0 2.0-8.0 2.0-8.0 2.0-8.0	0-2 2-5 2-8 2-8 2-8

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth     	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum   	   Salinity     	Sodium  adsorption   ratio
	   In	meq/100 g	pH	Pct	Pct	mmhos/cm	-   
380:	 				 		
Casamero	l   0–3	20-30	7.9-9.0	1-10	0-1	0.0-4.0	0-2
	3-11	20-40	7.9-9.0	1-10	1-5	2.0-4.0	2-5
	11-18   18-20	20-40	7.9-9.0	1-10 	1-5 	2.0-8.0	2-5
385:	 	į	į	į	į	 	į
Mcorreon	0-2	10-20	6.6-7.3	0-5	0	0	0
	2-5	15-30	6.1-6.5	0-5	0	0	0-1
	5-16	30-40	6.1-6.5	0-5	0	0	0-1
	16-22	30-40	7.9-9.0	15-45	0	0.0-2.0	0-1
	22-70   70-74	30-40	7.9-9.0 	15-45 	0	0.0-2.0	0-1
Rock outcrop	   0						
390:	   	į	į	į	į	!	į
Banquito	l l 0-2	5.0-15	1 7.4-7.8	0-5	l l 0	0.0-2.0	1 0
	2-9	10-20	7.9-8.4	5-15	0	0.0-2.0	0
	9-17	10-20	7.9-8.4	15-30	0	0.0-2.0	0
	17-22	5.0-20	7.9-8.4	15-55	0	0.0-2.0	0
	22-36	5.0-20	7.9-8.4	15-55	0	0.0-2.0	0
	36-40	5.0-20	7.9-8.4	15-55	0	0.0-2.0	0
395:	 						
Cabezon	0-2	10-20	6.1-7.3	0	0	0	0
	2-6	15-30	6.1-7.3	0	0	0	0-1
	6-14	20-40	6.6-7.8	0	0	0.0-2.0	0-1
	14-17   17-20		 		 	 	
	17-20				 	 	
Mcorreon	0-2	10-20	6.6-7.8	0-5	0	0	0
	2-13	30-40	6.6-7.8	0-5	0	0	0-1
	13-19	30-40	6.6-7.8	0-5	0	0	0-1
	19-27   27-70	15-30 1 15-30	7.9-8.4	15-45 15-45	0   0	0.0-2.0	0-1
	70-80					0.0-2.0	
400:	 		 	 	 	 	
Shoemaker	0-2	5.0-15	6.1-7.3	0	0	0	0
	2-7	5.0-15	6.1-7.3	0	0	0	0
	7-20	10-25	6.1-7.3	0	0	0	0
	20-28		6.1-7.3	0	0	0	0
Stozuni	28-40 0-2 l		6.6-7.3	0	0	0	   0
DCOZUIII			6.6-7.3	1 0	1 0	1 0	l 0
			6.6-7.3	0	0	0	0
	15-20	i	i	i		 I	
403:			ļ			<u> </u>	
Valnor	0-2	15-25	6.6-7.8	0	0	0	0
	2-4	10-25	6.6-7.8	0	0	0.0-2.0	0
	4-20 20-34	15-40 15-40	6.6-7.8 6.6-7.8	0   1-5	0   0	0.0-2.0	0
	'					0.0-2.0	
	34-40	1		:	-		-

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	   Depth     	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum   	   Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
403: Techado	   0-3   3-13   13-20	   20-40   15-40 	   6.6-7.3   6.6-7.8 	   0   0 	   0   0 	   0.0-2.0   0.0-2.0 	   0-1   0-1 
404: Rock outcrop	     0		   	   	   	   	
Techado	0-5   5-8   8-17   17-20	15-30   15-40   15-40 	   6.6-7.3   6.6-7.8   6.6-7.8 	0   0   0 	   0   0   0	0.0-2.0   0.0-2.0   0.0-2.0 	0-1   0-1   0-1 
Stozuni	0-1   1-7   7-20	5.0-15   5.0-15 	6.6-7.3   6.6-7.3 	0   0-1 	   0   0 	   0   0 	0 0 0
405: Fortwingate	   0-1   1-4   4-9   9-26   26-40	   5.0-15   20-25   25-30 	     6.6-7.3   6.6-7.8   7.4-7.8	     0   0   0	     0   0   0 	     0   0   0	   0   0   0
Owlrock	0-1   1-6   6-13   13-20	5.0-10   10-20   10-20 	7.4-8.4 7.4-8.4 7.4-8.4	5-15   5-15   5-15 	   0   0   0	0.0-2.0   0.0-2.0   0.0-2.0 	0 0 0
406: Polich	0-13   13-23   23-40   40-48   48-58   58-70	10-20 10-20 15-25 15-25 10-30 10-15	7.4-8.4 7.4-8.4 7.9-8.4 7.9-8.4 7.9-8.4 7.9-8.4	1-5 1-10 5-15 5-15 5-10 5-10		0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0 0.0-2.0	
407: Cinnadale	0-2   2-9   9-15   15-20	5.0-10   5.0-10   5.0-10   5.0-10	   6.6-7.3   6.6-7.3   6.6-7.3 	   0   0   0 	   0   0   0	0 0 0	0 0 0
Heckly	0-3   3-15   15-38   38-40	5.0-15   15-20   10-15 	7.4-7.8   7.4-7.8   7.4-7.8 	   0   0   0 	   0   0   0	0.0-2.0   0.0-2.0   0.0-2.0 	0 0 0
408: Mirabal	   0-1   1-2   2-6   6-13   13-30   30-40	   4.0-5.0   5.0-6.0   5.0-6.0   5.0-6.0	   6.1-6.5   6.1-6.5   6.6-7.3   6.6-7.3	     0   0   0   0 	     0   0   0   0 	     0   0   0   0	

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum     	Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	-  
408:			 				
Zuni	0-1						
	1-3	5.0-10	6.6-7.3	0	0	0	0
	3-18	15-20	6.6-7.3	0	0	0	0
	18-27	15-20	6.6-7.3	0	0	0	0
	27-40						
409:			 	 			l I
Rauster	0-1	15-20	7.4-7.8	0	0	0	0
İ	1-5	20-35	7.4-7.8	0	0	0	0
	5-28	20-35	7.4-7.8	1-5	0	0	0
į	28-55	20-35	7.4-7.8	1-10	0	0	0
ļ	55-60						
Rock outcrop	0		 			 	
410:			 	 			l I
Montillo	0-3	10-25	6.1-7.3	0	0	0	0
	3-8	20-40	6.6-7.3	0	0	0	0
	8-15	20-40	7.4-7.8	0	0	0	0
	15-27	40-60	7.4-7.8	0	0	0	0
	27-32	40-60	7.4-7.8	0	0	0	0
	32-40						
Tsoodzil	0-3	15-25	   6.1-7.3	0	0	0	0
	3-10	15-30	6.6-7.3	0	0	0	0
	10-21	25-45	6.6-7.3	0	0	0	0
	21-46	25-45	7.4-7.8	0-1	0	0.0-2.0	0
	46-70	15-35	7.4-7.8	0-1	0	0.0-2.0	0
411:			 	 	 		
Ligocki	0-2	5.0-15	6.6-7.3	0	0	0	j o
į	2-8	5.0-15	6.6-7.3	0	0	0	0
į	8-21	20-30	7.4-7.8	0	0	0	0
İ	21-30	15-25	7.4-8.4	5-10	0	0.0-2.0	0
	30-41	10-20	7.4-8.4	5-15	0	0.0-2.0	0
	41-70	10-20	7.4-7.8	5-15	0	0.0-2.0	0
   Robolata	0-6	10-20	   7.4-7.8	l   0	l   0	l   0	1 0
i	6-12	10-20	7.4-7.8	j 0	0	0.0-2.0	j o
i	12-20	20-35	7.4-7.8	j 0	0	0.0-2.0	j o
į	20-30	15-25	7.4-7.8	0	0	0.0-2.0	0
i	30-50	10-25	7.4-7.8	5-10	0	0.0-2.0	0
į	50-70	5.0-10	7.4-7.8	5-10	0	0.0-2.0	0
412:			 	 	 	 	
Rock outcrop	0						
Rionutria	0-3	10-20	   6.6-7.8	   0	   0	   0	   0
	3-12	15-30	7.4-7.8	5-10	0	0.0-2.0	0
			,			,	,
i	12-24	15-25	7.4-8.4	5-10	0	0.0-2.0	0

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth   	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum   	Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
44.0		-	ļ				
112:	0-3		7004				
Zaster	3-11	5.0-15	7.9-8.4	5-10   10-15	0   0	0.0-2.0	0   0
	11-27	5.0-15	7.9-8.4	10-15	l 0	0.0-2.0	1 0
	27-40					0.0-2.0	
13:	 		 	 	 		
Morclav	0-1	15-40	7.4-7.8	l 0-1	l 0	0.0-2.0	0-1
	1-5	15-40	7.4-7.8	1-5	l 0	0.0-2.0	0-1
	5-48	15-25	7.4-7.8	1-5	0	0.0-2.0	0-1
	48-56	15-25	7.4-7.8	1-5	0	0.0-2.0	0-1
	56-70	15-25	7.4-7.8	1-5	I 0	0.0-2.0	0-1
	70-80		ļ	ļ			
14:			 	 	 	 	
Zunalei	0-1	5.0-10	6.6-7.3	0	0	0	0
	1-6	5.0-10	6.6-7.3	0	0	0	0
	6-20	10-20	6.6-7.3	0	0	0	0
	20-50	10-15	7.4-7.8	0	0	0.0-2.0	0
	50-70	10-15	7.4-7.8	0-5	0	0.0-2.0	0
Corzuni	0-1				 	 	
	1-8	5.0-10	6.6-7.3	0	0	0	0
	8-29	5.0-15	6.6-7.3	0	0	0	0
	29-45	5.0-15	6.6-7.3	0	0	0	0
	45-70 	5.0-15	7.4-7.8	1-5 	0 	0.0-2.0	0
15:	į	į	į				į
Tsoodzil	0-3	15-25	6.1-6.5	0	0	0	0
	3-7	15-30	6.6-7.3	0	0	0	0
	7-22	20-40	6.6-7.3	0	0	0	0
	22-65	25-45	6.6-7.3	0-1 	0 	0.0-2.0	0
Rubble land	0						
16:	 		 	 	 	 	
Rock outcrop	0				 	 	
Bluesky	0-5	2.0-5.0	6.6-7.3	0	0	0	0
	5-8	2.0-5.0	6.6-7.3	0	0	0	0
	8-20						
18:			! 	 	 	 	
Asaayi	0-1						
	1-3	5.0-10	6.6-7.3	0	0	0	0
	3-5	10-15	6.6-7.3	0	0	0	0
	5-16	15-20	6.6-7.3	0	0	0	0
	16-20 			 	 	 	
Osoridge	0-2	15-25	6.6-7.3	0	0	0	0
	2-6	15-30	6.6-7.3	0	0	0	0
	6-18	15-30	6.6-7.3	0	0	0	0
	18-20						

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth     	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	Gypsum     	Salinity   	Sodium  adsorption   ratio
	In	meq/100 g	Hq	Pct	Pct	mmhos/cm	
19:			 		 		
Fortwingate	0-5	5.0-10	6.6-7.3	0	0	0	0
	5-13	15-30	6.6-7.8	0	0	0	0
	13-21	10-15	6.6-7.8	0	0	0	0
	21-26	15-20	6.6-7.8	0	0	0	0
	26-40						
Cinnadale	   0–6	5.0-10	   6.6-7.3	0	   0	l   0	0
	6-11	5.0-10	6.6-7.3	0	0	0	0
	11-20						
Rock outcrop	   0 		   	   	   	   	
20:				İ			İ
Seco	0-3	20-30	6.1-7.3	0	0	0	0
	3-11	30-45	6.6-8.4	0	0	0	0
	11-23	30-50	6.6-8.4	0	0	0.0-2.0	0
	23-58	30-50	7.4-8.4	1-5	0	0.0-2.0	0
	58-70 	30-50	7.4-8.4	1-5	0 	0.0-2.0	0
25:			! 		 	 	
Montillo	0-2	10-25	6.1-7.3	0	0	0	0
	2-8	20-40	6.1-7.3	0	0	0	0
	8-18	20-40	6.1-7.3	0	0	0	0
	18-35	20-40	6.1-7.3	0	0	0	0
	35-40						
Canoneros	0-2	10-20	6.1-7.3	0	   0	l   0	0
	2-8	15-25	6.1-7.3	0	0	0	0
	8-13	20-35	6.1-7.3	0	0	0	0
	13-20						
30:	 		 	 	 		l I
Montillo	0-4	10-25	6.1-7.3	0	0	0	0
	4-13	20-40	6.6-7.8	0	0	0	0
	13-31	20-40	6.6-7.8	0	0	0	0
	31-38	20-40	6.6-7.8	0	0	0	0
	38-40						
35:	 	 	 	 	 	 	l I
Tsoodzil	0-3	15-25	6.1-7.3	0	0	0	0-2
	3-11	20-35	6.1-7.3	0	0	0	0-2
	11-25	25-45	6.6-7.3	0	0	0	0-2
	25-32	20-40	7.4-7.8	1-10	0	0	0-2
	32-65	15-35	7.4-7.8	1-10	0	0.0-2.0	0-2
Amcec	0-4	15-20	   6.6-7.3	0	   0	   0	0
	4-16	15-20	7.4-7.8	0	0	0	0
	16-39	15-20	7.4-8.4	1-10	l 0	0	0
	39-53	5.0-10	7.4-8.4	1-10	0	0	0
	53-70	5.0-10	7.4-8.4	1-10	l 0	l 0	0

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-  exchange   capacity	Soil   reaction 	Calcium  carbonate 	   Gypsum     	   Salinity     	Sodium  adsorption   ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
440:			 	 	 	 	
Chivato	0-2	25-40	6.1-7.3	0	i 0	0.0-2.0	0-1
	2-13	25-45	6.6-7.8	0	0	0.0-2.0	0-1
	13-40	25-45	6.6-7.8	0	0	0.0-2.0	0-1
	40-52	25-45	6.6-7.8	0	0	0.0-2.0	0-1
	52-65	25-45	6.6-7.8	0	0	0.0-2.0	0-1
525:			 		 	 	
Silcat	0-2	15-30	7.4-7.8	0-1	0	0.0-2.0	0-2
	2-38	20-40	7.4-8.4	0-5	j 0	0.0-2.0	0-2
	38-65	20-40	7.4-8.4	0-5	0	0.0-2.0	0-2
550:							
550: Bryway	0-2	5.0-20	   6.6-7.8	0	0	I I 0	0
	2-6	15-35	6.6-7.8	0	0	0	0
	6-32	15-35	7.4-7.8	0-5	j 0	I 0	j o
	32-40		j	j	j		j
Galzuni	0-2	10-20	   6.6-7.8	   0	   0	   0	   0
Gaizaii	2-4	15-35	7.4-7.8	0	1 0	I 0	1 0
	4-23	15-35	7.4-7.8	0-1	1 0	0.0-2.0	0-2
	23-32	15-25	7.4-7.8	1-5	0	0.0-2.0	0-2
	32-52	15-30	7.4-7.8	1-5	0	0.0-2.0	0-2
	52-65	10-25	7.4-7.8	1-5	0	0.0-2.0	0-2
555:						 	
Parkelei	0-3	5.0-15	6.6-7.8	1 0	l I 0	I I 0	0-1
141710101	3-12	10-25	6.6-7.8	1 0	1 0	l 0	0-1
	12-21	10-25	6.6-7.8	0	0	l 0	0-1
	21-65	5.0-15	6.6-7.8	0-5	0	0.0-2.0	0-1
Thereads						   0	
Evpark	0-3   3-16	5.0-15 15-25	6.6-7.3	0   0	0   0	l 0	0   0
	16-20	10-20	6.6-7.3	1 0	I 0	l 0	1 0
	20-29	10-20	7.4-7.8	1 0	I 0	0.0-2.0	0-1
	29-35	10-20	7.4-7.8	l 1–10	1 0	0.0-2.0	0-1
	35-40						
560: Flugle	0-3	5.0-15	   6.6-7.8	   0-1	l l 0	   0.0-2.0	   0-1
riugie	3-35	10-25	6.6-7.8	0-1	1 0	0.0-2.0	0-1
	35-65	5.0-15	7.4-8.4	5-10	0	0.0-2.0	0-1
Teczuni	0-2	10-20	6.6-7.8	0-5	0	0.0-2.0	0
	2-16	15-25	6.6-7.8	0-5	0	0.0-2.0	0
	16-33   33-65	15-25 15-30	6.6-7.8   7.4-8.4	5-15 15-30	0   0	0.0-2.0	0
	55 65	13 30	/ 0	13 30		0.0 2.0	
561:							
Flugle	0-3	5.0-15	6.6-7.8	0-5	0	0	0
	3-17	10-25	6.6-7.8	0-5	0	0.0-2.0	0-1
	17-65	5.0-15	7.4-8.4	5-10	0	0.0-2.0	0-1

Table 16.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	   Cation-  exchange   capacity	   Soil   reaction	   Calcium  carbonate	Gypsum	Salinity	   Sodium  adsorption   ratio
	In	  meq/100 g	   pH	Pct	Pct	mmhos/cm	
561:				 			 
Plumasano	0-2	5.0-15	6.6-7.8	1-5	0	0.0-2.0	0
	2-11	5.0-15	6.6-7.8	1-5	0	0.0-2.0	0
	11-27	5.0-15	7.4-7.8	5-15	0	0.0-2.0	0
	27-43	5.0-15	7.4-7.8	5-15	0	0.0-2.0	0
	43-53	5.0-15	7.4-7.8	5-15	0	0.0-2.0	0
	53-65	10-20	7.4-7.8	5-15	0	0.0-2.0	0
565:	İ			 			
Plumasano	l l 0–3	   5.0-15	   6.6–7.8	l l 1-5	l l 0	   0.0-2.0	I I 0
FIUMASATIO	3-24	5.0-15	6.6-7.8	l 1-5	l 0	0.0-2.0	1 0
	24-36	5.0-10	6.6-7.8	l 1-5	l 0	0.0-2.0	1 0
	24-36   36-65	5.0-10	7.4-7.8	1-5   5-15	I 0	0.0-2.0	1 0
	30-03	3.0-13	/.4-/.0	2-13	0	0.0-2.0	]
Rock outcrop	0						
566:		 	 	 			
Bamac	0-2	5.0-10	7.4-8.4	5-15	0	0.0-2.0	0
	2-8	5.0-10	7.4-8.4	5-15	0	0.0-2.0	0
	8-30	5.0-10	7.4-8.4	5-15	0	0.0-2.0	0
	30-63	5.0-10	7.4-8.4	5-15	0	0.0-2.0	0
575:							
Ramah	l 0–3	   5.0-15	l 6.6-7.8	l l 0-1	l 0	l 0	I 0
rement	l 3–8	10-25	6.6-7.8	l 0-5	l 0	l 0	1 0
	8-15	15-25	6.6-7.8	l 0-5	l 0	l 0	1 0
	15-33	15-25	7.9-8.4	5-15	l 0	0.0-2.0	0-1
	33-41	15-25	7.9-8.4	15-30	l 0	0.0-2.0	0-1
	41-62	10-20	7.9-8.4	5-10	l 0	0.0-2.0	0-1
		10 20		3 10		0.0 2.0	
Pescado	0-3	5.0-15	6.6-7.3	0	0	0	0-1
	3-10	10-25	6.6-7.8	0-1	0	0	0-1
	10-16	10-25	6.6-7.8	1-5	0	0.0-2.0	0-1
	16-20						
							ļ

Table 17.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol	Restrictive	layer	   _  Potential	Risk of	corrosion
and soil name	     Kind	Depth to top	for   frost action	Uncoated steel	   Concrete
8: Water			     		       
10: Tsosie	   	   	Low	    High	Low
Councelor			Low	  High	Low
Blancot	 	 	Low	  High	Low
11: Doakum	 	   	Low	    High	Low
Betonnie	 	   	Low	  High 	Low
12: Calladito	   	   	Low	    Moderate 	Low
Elias	   	   	Low	  High 	  High 
13: Councelor	   	   	Low	    High 	Low
Calladito	   	   	Low	  Moderate 	Low 
14: Councelor	   	   	Low	    High 	Low
Eslendo	  Bedrock   (paralithic)	5-20	Low	  High 	Moderate
Calladito	   	   	Low	  Moderate 	Low
16: Starlake	   	   	Low	    High 	    High 
22: Querencia	   		Low	  High	Low
Lavodnas	  Bedrock   (paralithic)	   10-20 	Low	  High 	  High 
30: Orlie	   	   	  Moderate	    High	Low
Tinian	  Bedrock (lithic)	20-40	Low	  High 	Low
40: Nuffel	   	   	Low	    High 	Low
42: Suwanee	   	   	Low	    High 	    Low 

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	     Potential	Risk of	corrosion
and soil name	   Kind	Depth to top	for   frost action	Uncoated steel	   Concrete
44: Suwanee	     	In	      Low	      High 	Low
45: Nutreeah	 		Low	    High 	    Moderate 
47: Conchovar			Low	    High 	    High 
49: Concho			Low	    High 	Low
51: Kwakina	   		  Low	    High 	    Low 
52: Zuniven			  Moderate	    High 	  Low 
53: Hawaikuh			Low	    High 	  Low 
54: Venadito			Low	    High 	    High 
55: Sparham			Low	    High 	    Low
60: Redpen			Low	    High 	    Low
100: Norkiki	    Bedrock (lithic)	20-40	Low	    High 	    Low
Kimnoli	Bedrock (lithic)	5-20	Low	  High 	Low 
110: Benally			Low	    High 	    High 
Fruitland			Low	  High 	  Moderate 
111: Yelives			Low	    High 	Low
115: Razito			Low	    High 	    Low
Shiprock	 		Low	  High 	  Moderate 
116: Fajada	    Bedrock   (paralithic)	20-40	  Low 	    High 	    High 
Huerfano	  Bedrock   (paralithic)	10-20	Low	  High 	  High 
Benally	  Bedrock   (paralithic) 	40-60	  Low 	  High   	  High   

Table 17. -- Soil Features -- Continued

Marana da 1	Restrictive	layer		Risk of	corrosion
Map symbol and soil name	     Kind 	Depth to top	Potential   for   frost action	   Uncoated   steel	   Concrete
118:		In			   
	Bedrock (lithic)	5-20	Low	  High 	Low
Chipeta	  Bedrock   (paralithic) 	5-20	  Low 	  High 	  High 
Rock outcrop	  Bedrock (lithic) 	0-0	  None 	 	   
120: Doak	   		    Low 	    High 	  Low 
Shiprock	   		Low	  High 	  Moderate 
121: Badland	  Bedrock   (paralithic)	0-2	    None 	    High 	  Low 
122: Farb	    Bedrock (lithic)	5-20	  Low	    High 	  Low
Rock outcrop	Bedrock (lithic)	0-0	None	   	   
125: Sanfeco	   		  Low 	    High 	  Low 
130: Chipeta	  Bedrock   (paralithic)	5–20	  Low 	    High 	    High 
Badlands	  Bedrock   (paralithic)	1-2	  Low 	  Low 	  High 
Moncisco	  Abrupt textural   change 	10-20	  Low 	  Low 	  High   
150: Riverwash	   		  None 	  High 	  Low 
Escawetter	 		Low	  High 	Low
160: Escawetter	 		  Low 	  High 	  Low 
Riverwash	 		   	  High 	Low
Razito	 		Low	  High 	Low
205: Penistaja	 		  Low 	  High 	  Low 
Tintero	 		Low 	  High 	Low 
208: Marianolake	   		  Low 	    High 	  Low 

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	Potential	Risk of	corrosion
and soil name	Kind	Depth to top	for   frost action	Uncoated steel	Concrete
210:		In		   	-    
Marianolake			Low	High 	Low
Skyvillage	Bedrock (lithic)	5-20	Low	  High 	Low
212: Rehobeth	 		  Low 	  High 	  High
215: Viuda	  Bedrock (lithic)	10-20	Low	  High	Low
Penistaja			Low	  High	Low
Rock outcrop	  Bedrock (lithic)	0-0	  None	 	
220: Hagerwest	  Bedrock (lithic)	20-40	Low	    High	Low
Bond	Bedrock (lithic)	10-20	Low	  High	Low
225: Aquima			Low	    High	Low
Hawaikuh			Low	  High 	Low
230: Sparank			Low	    High	Low
San Mateo			Low	High	Low
Zia			Low 	  High 	Low
235: Notal			Low	    High	  High
Hamburn			Low	High	  Moderate
240: Breadsprings			Low	    High	Low
Nahodish			Low	  High	Low
241: Mentmore	   		Low	    High	Low
242: Gish			Low	    High	Low
Mentmore			Low	  High	Low
244: Buckle	   		Low	    High 	    Low 

Table 17. -- Soil Features -- Continued

Map symbol	Restrictive	layer	   Potential	Risk of	corrosion
and soil name	Kind	Depth to top	for   frost action	Uncoated steel	   Concrete
245:		In	   	   	   
Buckle			Low	  High 	Low
Gapmesa	Bedrock (lithic)	20-40	Low	  High	Low
Barboncito	Bedrock (lithic)	10-20	Low	  High	Low
250: Hospah	  Bedrock   (paralithic)	5–20	    Low 	    High 	    Low 
Skyvillage	  Bedrock (lithic)	5-20	Low	  High	Low
Rock outcrop	  Bedrock (lithic)	0-0	  None	 	
255: Farview	    Bedrock (lithic)	5-20	    Low	    Low	Low
Rock outcrop		0-0	 	 	 
258: Eagleye	  Bedrock   (paralithic)	5–20	    Low 	    High 	    Low 
Atchee	  Bedrock (lithic)	5-20	Low	  High	Low
Rock outcrop		0-0			
260: Quarries and Pits	    Bedrock (lithic)	0-0	    None 	   	   
261: Coal Mine Lands			   	   	   
265: Uranium Mined Lands			  None 	   	   
270: Alesna	  Bedrock   (paralithic)	40-60	  Low 	    High 	  Low 
Rock outcrop	Bedrock (lithic)	0-0	  None	 	 
275: Eldado	   		    Low	    High 	    Low
280: Azabache			    Low 	    High 	    High 
290: Rock outcrop	  Bedrock (lithic)	0-0	    None 	   	   
Westmion	  Bedrock   (paralithic)	5-20	  Low 	  High   	  Low 
Skyvillage	Bedrock (lithic)	5–20	  Low 	  High 	  Low 

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	   Potential	Risk of	corrosion
and soil name	Kind	Depth to top	for frost action	Uncoated steel	Concrete
291: Rock outcrop	      Bedrock (lithic)	In 0-0	     	     	     
Eagleye	İ	5–20	Low	  High 	  Low 
Atchee	  Bedrock (lithic)	5–20	Low	  High	Low
300: Regracic	 		Low	    Moderate 	  Low 
305: Celavar	  Bedrock (lithic)	20-40	  Moderate	  High	Low
Atarque	  Bedrock (lithic)  	10-20	  Moderate 	  High 	  Low 
308: Fikel	 		  Low	  High	  Low
Venzuni	·		Low	  High 	Low
310: Parkelei	 		  Moderate 	  High 	Low
312: Bluewater	 		  Moderate	  High	Low
315: Flugle			    Moderate	    High	Low
Fragua	    		  Moderate 	  High 	  Low 
316: Royosa	 		Low	  Moderate 	  Low 
317: Highdye	  Bedrock (lithic)	5-20	Low	  High	Low
Evpark	  Bedrock (lithic)	20-40	  Moderate 	  High 	  Low 
Bryway	Bedrock   (paralithic)	20-40	Moderate	  High 	Low 
320: Parkelei			  Moderate	    High 	Low
Fraguni	 	   	  Moderate 	  Moderate 	Low 
325: Venzuni	 		Low	  High	Low
332: Evpark	    Bedrock (lithic)	20-40	    Moderate	    High	Low
Arabrab	  Bedrock (lithic)  	10-20	  Moderate 	  Moderate 	  Low 

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	 _  Potential	Risk of	corrosion
and soil name	Kind	Depth to top	for   frost action	Uncoated steel	Concrete
335:	   	In	   	   	   
Venadito	-		Low	High 	Low
336: Nuffel	-		Low	  High	Low
Venadito	-		Low	  High	Low
338: Zyme	  - Bedrock   (paralithic)	5-20	Low	    High 	  Low 
Lockerby	  - Bedrock   (paralithic)	20-40	Low	  High 	  Low 
345: Rock outcrop	  -  Bedrock (lithic)	0-0	    None	   	     
Tuces	- Bedrock   (paralithic)	20-40	Low 	High 	Low
350: Toldohn	Bedrock	5-20	Low	    High 	Low
Vessilla	  Bedrock (lithic)	5-20	  Moderate	Low	Low
Rock outcrop	- Bedrock (lithic)	0-0	None		
351: Rock outcrop	  -  Bedrock (lithic)	0-0	    None	   	   
Vessilla	- Bedrock (lithic)	5-20	Moderate	Low	Low
352: Zia	  -		Low	    High 	  Low
353: Mido	  -		  Low	  Moderate	Low
354: Knifehill	-		  Moderate	    High	Low
355: Rizno	  - Bedrock (lithic)	5-20	  Low	    Moderate 	  Low
Tekapo	  Bedrock   (paralithic)	5-20	Low	  High 	Low
Rock outcrop	  Bedrock (lithic)  	0-0	  None 	   	   
357: Heshotauthla	-  -		Low	  High 	  High 

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	     Potential	Risk of	corrosion
and soil name	Kind	Depth to top	for   frost action	Uncoated steel	Concrete
360: Hosta	     	   In   	      Moderate	      High	Low
Concho		 	Low	  High	Low
361: Monpark	    Bedrock   (paralithic)	     20-40 	  Low 	    High   	    Moderate   
365: Vessilla	  Bedrock (lithic)	   5–20	  Moderate	    High 	Low
Rock outcrop	Bedrock (lithic)	   0-0 	None	 	 
366: Bosonoak		   	  Moderate	    High 	Low
367: Chunkmonk	  Bedrock (lithic)	   10-20 	  Moderate 	  High 	Low
368: Simitarq	  Bedrock (lithic)	   5-20 	  Moderate 	  Moderate 	Low
Celavar	Bedrock (lithic)	20-40	Moderate	  High 	Low
375: Todest	  Bedrock (lithic)	   20-40 	  Moderate 	  High 	Low
Shadilto	Bedrock (lithic)	5-20	Moderate	  High 	Low
376: Todest	  Bedrock (lithic)	20-40	  Moderate 	  High 	Low
380: Berryhill	 	 	  Low	  High 	  High 
Casamero	Bedrock   (paralithic)	10-20	Low	  High 	  High 
385: Mcorreon	  Bedrock (lithic)	   	Low	    High 	  Low 
Rock outcrop	Bedrock (lithic)	   0-0 	None	 	 
390: Banquito	  Bedrock (lithic)	20-40	  Moderate 	    High 	Low
395: Cabezon	  Bedrock (lithic)	   10-20 	  Low	  High 	Low
Mcorreon	Bedrock (lithic)	   	Low	  High 	Low
400: Shoemaker	  Bedrock (lithic)	20-40	  Moderate 	  Moderate 	Low
Stozuni	Bedrock (lithic)	5-20	Moderate	Low	Low

Table 17.--Soil Features--Continued

	Restrictive	layer		Risk of	corrosion
Map symbol and soil name	     Kind	Depth to top	Potential   for   frost action	Uncoated steel	Concrete
403: Valnor	      Bedrock   (paralithic)	In   20-40	Low		      Low 
Techado	  Bedrock   (paralithic)	   10-20 	  Low 	  Moderate 	  Low 
404: Rock outcrop	    Bedrock (lithic)	     0-0	    None		
Techado	  Bedrock   (paralithic)	   10-20 	Low	  Moderate 	  Low 
Stozuni	  Bedrock (lithic) 	   5–20 	  Moderate 	  Low 	  Low 
405: Fortwingate	  Bedrock (lithic)	20-40	  Low	    High 	  Low
Owlrock	  Bedrock (lithic) 	5-20	  Moderate 	  High 	Low 
406: Polich	   	 	  Moderate	    High 	  Low
407: Cinnadale	    Bedrock (lithic)	10-20	    Moderate	    Moderate	Low
Heckly	  Bedrock (lithic)	   20-40 	  Low 	  High 	  Low 
408: Mirabal	    Bedrock (lithic)	20-40	  Moderate	  Low	  Low
Zuni	  Bedrock (lithic) 	20-40	Low 	  High 	Low 
409: Rauster	  Bedrock   (paralithic)	   40-60 	  Low 	  High 	  Low 
Rock outcrop	  Bedrock (lithic) 	   0-0 	  None 	   	   
410: Montillo	    Bedrock (lithic)	20-40	Low	    High 	Low
Tsoodzil	   	   	Low	  High 	Low 
411: Ligocki	 	 	  Low	    High 	  Low
Robolata	   	   	  Moderate 	  High 	Low 
412: Rock outcrop	  Bedrock (lithic)	0-0	  None	 	   
Rionutria	  Bedrock (lithic) 	20-40	Low	  High 	  Low 
Zaster	Bedrock (lithic)	20-40	Moderate 	  High 	Low

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	     Potential	Risk of	corrosion
and soil name	   Kind	Depth to top	for   frost action	Uncoated steel	   Concrete
413: Morclay	    Bedrock   (paralithic)	In	Low		      Low 
414: Zunalei			  Moderate	    High	Low
Corzuni	-  -		  Moderate 	  Low 	Low  Low
415: Tsoodzil	·		Low	    High 	Low
Rubble Land			None	  High 	Low
416: Rock outcrop	  Bedrock (lithic)	0-0	  None	 	 
Bluesky	  Bedrock (lithic)	5-20	Low	Low	Low
418: Asaayi	  Bedrock (lithic)	5-20	  Moderate	Low	Low
Osoridge	Bedrock (lithic)	10-20	Low	  High 	Low
419: Fortwingate	  Bedrock (lithic)	20-40	Low	  High	Low
Cinnadale	  Bedrock (lithic)	5-20	  Moderate 	  Moderate 	  Low 
Rock outcrop	-		  None 	   	   
420: Seco	    		Low	  High 	Low
425: Montillo	  Bedrock (lithic)	20-40	Low	  High 	Low
Canoneros	Bedrock (lithic)	10-20	Low	  High 	Low
430: Montillo	  Bedrock (lithic) 	20-40	  Low 	  High 	  Low 
435: Tsoodzil	  -		Low	  High	Low
Amcec	  -   ===		  Moderate	  High 	Low
440: Chivato			Low	    High 	  Low 
525: Silcat			Low	    High 	Low
550: Bryway	  Bedrock   (paralithic)	20-40	  Moderate 	    High   	  Low 

Table 17.--Soil Features--Continued

Map symbol	Restrictive	layer	Potential	Risk of	corrosion
and soil name	Kind	Depth to top	for frost action	Uncoated steel	Concrete
		In	 	 	 
550: Galzuni	 		  Low	    High 	  Low 
555: Parkelei			    Moderate	    High	Low
Evpark	  Bedrock (lithic)	20-40	  Moderate	  High	Low
560: Flugle	   		    Moderate	    High 	    Low
Teczuni			  Moderate	  High	Low
561: Flugle	 		    Moderate	    High	    Low
Plumasano			  Moderate	  High	Low
565: Plumasano	 		    Moderate	    High	Low
Rock outcrop	  Bedrock (lithic)	0-0	None	 	
566: Bamac	 		    Low	    High 	    Low
575: Ramah	   		    Moderate 	    High 	    Low
Pescado	  Bedrock (lithic)  	5-20	  Moderate 	  High 	  Low 
				 	İ

Table 18.--Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

		 	Water table		Ponding			Flooding	
Map symbol and soil name	Hydro-  logic  group	Month   	Upper   limit	Lower   limit 	Surface   water   depth	Duration	Frequency   	Duration	Frequency   
			Ft	Ft	Ft		 		 
8:		 							 
Water			İ					İ	! 
		Jan-Dec	j		j j		None		None
10:		 							 
Tsosie	- B	[						[	
		March					None	Very brief	Rare
		April					None	Very brief	Rare
	!	May					None	Very brief	Rare
		June					None	Very brief	Rare
		July					None	Very brief	Rare
		August					None	Very brief	Rare
Councelor	- В	į	į		į į		İ		į
	ļ	March					None	Very brief	Rare
	ļ	April					None	Very brief	Rare
	ļ	May					None	Very brief	Rare
	ļ	June					None	Very brief	Rare
	ļ	July					None	Very brief	Rare
		August 					None	Very brief 	Rare 
Blancot	-   В	Jan-Dec	i i	i 	 		None	i !	   None
11:		 						 	 
Doakum	-   в	i	ì	İ	i i		i	i	İ
	i -	Jan-Dec	i				None		None
	i		ì	İ	i i		1	i	İ
Betonnie	- В	i	ì	İ	i i		i	i	İ
	i	Jan-Dec					None		None
			ļ						
12:			1						
Calladito	-  A								
		Jan-Dec					None		None
Elias				1			1		
Ellas	-  C	 		1					
		Jan-Dec					None		None
13:		1	i i				I I	 	l I
Councelor	 -  B		1	1			-	1	l I
Counceror	1 5	March		1		 	None	Very brief	Rare
	1						None	:	Rare
	i i	April  May		l			None	Very brief   Very brief	Rare
	1	June					None	Very brief	Rare
	I I	July					None	Very brief	Rare
	I	August					None	Very brief	Rare
		nugust					I MOTTE	Aera prier	l vare
Calladito	-   A	i	i	i				i	
	i	Jan-Dec					None		None
	İ	i	İ	İ	į i		İ	i	
	1								

Table 18.--Water Features--Continued

		 	Water table		Ponding			Flooding	
Map symbol and soil name	  Hydro-  logic  group	   Month   	   Upper   limit 	Lower   limit 	Surface   water     depth	Duration	Frequency   	   Duration   	Frequency   
		 	Ft	Ft	   Ft			 	 
14:		 	 	 			 	 	 
Councelor	B	i	i	İ	i i		i		İ
	i	March	i		i i		None	Very brief	Rare
	i	April	i		i i		None	Very brief	Rare
	i	May	j	i	i i		None	Very brief	Rare
	İ	June	j	i	i i		None	Very brief	Rare
	İ	July	j	i	i i		None	Very brief	Rare
		August			ļ ļ		None	Very brief	Rare
Eslendo	   D	 		 			 	 	 
	į	Jan-Dec			j j		None		None
Calladito	A	 	 	 			 	 	 
		Jan-Dec		 			None	 	None
16:									
Starlake	D								
		March					None	Very brief	Rare
		April					None	Very brief	Rare
		May					None	Very brief	Rare
		June					None	Very brief	Rare
		July  August	 	 	 		None   None	Very brief   Very brief	Rare   Rare
			ļ		į į				
22: Querencia	   B	 	 	 			 	 	 
	į	Jan-Dec			j j		None		None
Lavodnas	   C			 					 
		Jan-Dec					None		None
30:								 	 
Orlie	B I	Jan-Dec	 	 	 		None	 	   None
			ļ		į į				
Tinian	C	 					 	 	 
40:		į	į	į	į į		į		į
Nuffel	B	 	[ [	l I			) 	1 77 1: -: - 6	 
	1	January		I			None	Very brief	Frequent
	I I	February  March	I	l l _			None	Very brief	Frequent   Frequent
	I I	March  April	I	l l _			None	Very brief   Very brief	:
	 	July	I	ı I			None   None	Very brief	Frequent   Frequent
	I I	August	I	l			None	Very brief	:
	I I	September	 	l	 		None	Very brief	Frequent   Frequent
	 	October	I	ı I			None	Very brief	:
	I I	November	 	l	 		None	Very brief	Frequent   Frequent
	 	December	I	ı I _			None	Very brief	
	!	1 December	!				I TAOTTE	I ACTA DITEL	Frequent

Table 18.--Water Features--Continued

	 		Water	table		Ponding		Floo	ding
Map symbol and soil name	Hydro-  logic  group	Month 	Upper     limit	Lower limit	Surface    water     depth	Duration	Frequency   	   Duration   	Frequency   
	-  		   Ft	Ft	   Ft			 	 
12:		 			 			 	 
Suwanee	- B	İ	i i		i i		İ	İ	İ
	İ	January					None	Very brief	Frequent
		February					None	Very brief	Frequent
		March					None	Very brief	Frequent
		April					None	Very brief	Frequent
	!	July					None	Very brief	Frequent
		August					None	Very brief	Frequent
		September					None	Very brief	Frequent
		October					None	Very brief	Frequent
		November December					None   None	Very brief   Very brief	Frequent   Frequent
	į	į	į į		į į		į		į -
44: Suwanee	 -  B	 						 	 
	i	January	i i		i i		None	Very brief	Frequent
	i	February	j j		i i		None	Very brief	Frequent
	į	March	j j		i i		None	Very brief	Frequent
	į	April	j j		j j		None	Very brief	Frequent
		July					None	Very brief	Frequent
		August					None	Very brief	Frequent
		September					None	Very brief	Frequent
		October					None	Very brief	Frequent
		November					None	Very brief	Frequent
		December					None	Very brief 	Frequent 
45:	į	į	į į		į į				į
Nutreeah	-  C								_
		March	3.5	>6.0			None	Very brief	Rare
		April	3.5				None	Very brief	Rare
		May	3.5				None	Very brief	Rare
		June	3.5				None	Very brief	Rare
		July  August					None   None	Very brief   Very brief	Rare   Rare
	į		į į		į į				į
47: Conchovar	 -  C	 			 			 	 
	i	March	2.5-5.0		i i		None	Very brief	Rare
	į	April	2.5-5.0		j j		None	Very brief	Rare
	į	May	2.5-5.0		j j		None	Very brief	Rare
		June	2.5-5.0				None	Very brief	Rare
		July	2.5-5.0				None	Very brief	Rare
		August	2.5-5.0				None	Very brief	Rare
		September	2.5-5.0				None		None
		October	2.5-5.0				None		None
19:								 	 
Concho	-		į i		į į				
		March					None	Very brief	Rare
		April	j j		j j		None	Very brief	Rare
		May	j j		j j		None	Very brief	Rare
	1	June	j j		j j		None	Very brief	Rare
	1	1							
		July	i i		j j		None	Very brief   Very brief	Rare

Table 18.--Water Features--Continued

			Water	table		Ponding		Floo	ding
Map symbol and soil name	Hydro-  logic  group	Month   	Upper     limit	Lower limit	Surface    water     depth	Duration	Frequency   	Duration	Frequency   
			   Ft	Ft	   Ft		 	 	 
51: Kwakina	     B	   						   	   
IWakilia	5	July					None	Very brief	   Occasional
	i	August	i i		i i		None	Very brief	Occasional
	İ	September	j j		j j		None	Very brief	Occasional
		October					None	Very brief	Occasional
		November					None	Very brief	Occasional
52:									 
Zuniven	В								
		March					None	Brief	Frequent
		April					None	Brief	Frequent
		May					None	Brief	Occasional
		June					None	Brief	Occasional
		July	 				None	Brief Brief	Frequent
		August  September					None None	Brief	Frequent   Frequent
		October					None	Brief	Occasional
	i		i i		i i				
53:			] [						[
Hawaikuh	- C				!!!				
		Jan-Dec					None		None
54:		I I					1	 	 
Venadito	   D	I I					I I	 	 
venderee		March	3.0-5.0				None	Very brief	Occasional
	i	April	3.0-5.0		i i		None	Very brief	Occasional
	İ	May	3.0-5.0		i i		None	Very brief	Occasional
	İ	June	3.0-5.0		j j		None	Very brief	Occasional
		July	3.0-5.0				None	Very brief	Occasional
		August	3.0-5.0				None	Very brief	Occasional
		September	: :				None	Very brief	Occasional
		October	3.0-5.0				None	Very brief	Occasional
55:		November	3.0-5.0				None		None
Sparham	   D							 	 
	-	  January					None	Very brief	Frequent
	i	February	i i		i i		None	Very brief	Frequent
	İ	March	j j		i i		None	Very brief	Frequent
		April					None	Very brief	Frequent
		July					None	Very brief	Frequent
		August					None	Very brief	Frequent
		September					None	Very brief	Frequent
		October					None	Very brief	Frequent
		November					None	Very brief	Frequent
		December					None	Very brief 	Frequent 
60:	İ	i	i i		i i		İ	İ	
Redpen	B				ļ I			[	!
		Jan-Dec					None		None
	1				1 1			I	I

Table 18.--Water Features--Continued

	i	 	Water	table		Ponding	ſ	Floor	aing
and soil name	  Hydro-  logic  group 	Month     	Upper   limit 		Surface   water     depth	Duration	Frequency   	Duration	Frequency   
	 		Ft	Ft Ft	   Ft			 	 
100: Norkiki	     C	      Jan-Dec		   			       None	   	       None
Kimnoli	     D	   		   			None		Notice
	-   	Jan-Dec		   			None	   	None
110: Benally	   C						News	   	   
Fruitland	     B	Jan-Dec 		   			None	   	None
riuiciaiu		  Jan-Dec 		 			None	 	None
111: Yelives	     B	   		   				   	   
		March					None	Very brief	
		April					None	Very brief	
		May					None	Very brief	
		June					None	Very brief	
		July  August					None None	Very brief   Very brief	Rare   Rare
115:		 		 				 	 
Razito	A 	  Jan-Dec					None		None
Shiprock	   B 	    Jan-Dec		   			   None	   	     None
116:	 			 				 	 
Fajada	C 	  Jan-Dec 		   			None	   	   None 
Huerfano	   D 	Jan-Dec					None		   None
Benally	   C 	    Jan-Dec		   			   None	   	     None
118:		 		 				 	 
Farb	D 	  Jan-Dec		 			None		None
Chipeta	D 	    Jan-Dec		   			None	   	     None
Rock outcrop		    Jan-Dec		 			     None	     ===	     None

Table 18.--Water Features--Continued

		[ [	Water	table	 	Ponding		Floor	ding
Map symbol and soil name	  Hydro-  logic  group 	   Month   	   Upper   limit 	Lower   limit 	Surface   water   depth	Duration   	Frequency   	   Duration   	Frequency   
			Ft	Ft	Ft				
120:			 						
Doak	B	  Jan-Dec				 	   None		   None
Shiprock	   B 	    Jan-Dec	   	   	   		     None	   	     None
121: Badland	     D		   	   	   		 	   	 
		Jan-Dec 	 	 			None		None
122: Farb	   D 	    Jan-Dec	   	   	   	   	     None	   	     None
Rock outcrop		    Jan-Dec	   	   	   		     None	   	     None
125:								    -	   
Sanfeco	C 	  March	 	 	 		None	   Very brief	   Rare
		April					None	Very brief	Rare
		May					None	Very brief	Rare
		June	 	 	 	 	None None	Very brief	Rare
		July  August					None	Very brief   Very brief	Rare Rare
130:		 	 	 	 		 	 	 
Chipeta	D	į	į	į	į į				
		Jan-Dec 	 	 			None		None
Badlands	D 	  Jan-Dec	 	 		 	   None	 	   None
Moncisco	   A 	    Jan-Dec	   	   	   		     None	   	     None
150: Riverwash		   	   	   	   		   	   	   
	į	March	i	i	i i		None	Very brief	Occasional
		April			i i		None	Very brief	Occasional
		May					None	Very brief	Occasional
		June					None	Very brief	Occasional
		July					None	Brief	Frequent
		August					None	Brief	Frequent
		September	 	 		<del></del> 	None	Very brief 	Occasional 

Table 18.--Water Features--Continued

		   	Water	table	<u> </u>	Ponding		Floor	ding
Map symbol and soil name	  Hydro-  logic  group	   Month   	Upper	Lower limit	Surface    water     depth	Duration	Frequency   	   Duration   	Frequency
	 	 	   Ft	Ft	   Ft				 
150: Escawetter	     A	   	   		       		   	   	  - 
			3.0-4.9				None		None
			3.3-5.0				None	Very brief	Occasional
	 		3.3-5.0   3.3-5.0		 		None   None	Very brief   Very brief	Occasional Occasional
	l I		3.3-5.0		 		None	Very brief	Occasional
			3.3-5.0		 		None	Brief	Frequent
	İ		3.3-5.0		 		None	Brief	Frequent
	İ	September			i i		None	Very brief	Occasional
4.50	į	į	į į		į į		į		
160:									
Escawetter	A	Maxab	12 2 5 01				None	   Nover byjef	   Occasional
	 		3.3-5.0   3.3-5.0				None   None	Very brief   Very brief	Occasional
	l I		3.3-5.0  3.3-5.0		 		None	Very brief   Very brief	Occasional
	l I		3.3-5.0		 		None	Very brief	Occasional
	 		3.3-5.0		 		None	Brief	Frequent
	İ	August			 		None	Brief	Frequent
		September	i i				None	Very brief	Occasional
	İ		i i		i i				
Riverwash	i	İ	i i		i i		i		
	İ	March	i i		i i		None	Very brief	Occasional
	İ	April	i i		i i		None	Very brief	Occasional
	İ	May	j j		i i		None	Very brief	Occasional
	İ	June	j j		i i		None	Very brief	Occasional
	İ	July	j j		i i		None	Brief	Frequent
		August					None	Brief	Frequent
		September					None	Very brief	Occasional
		October	3.0-4.9				None		None
Razito	   A 	    Jan-Dec					     None	   	     None
205: Penistaja	   в	 						 	 
remstaja	l Þ	  Jan-Dec					None	 	   None
	l I	l l			 		None	 	l Notie
Tintero	l l B	I I			! ! 		l I	 	 
11110010	-	Jan-Dec	 		 		None	 	None
	İ		i i		i i				
208:	İ	İ	i i		i i		į	<u> </u>	<u> </u>
Marianolake	В	İ	i i		i i		į	<u> </u>	<u> </u>
	İ	Jan-Dec	i i		i i		None		None
	İ	ĺ	į į		į į		İ		
210:	İ	ĺ	į į		į į		İ		
Marianolake	В	ĺ	į į		į į		İ		
		Jan-Dec					None		None
			l İ		l İ		1		
Skyvillage	D								
		Jan-Dec					None		None

Table 18.--Water Features--Continued

			Water	table		Ponding		Flood	ling
Map symbol and soil name	  Hydro-  logic  group 	Month     	Upper   limit 	Lower   limit 	Surface   water     depth	Duration	Frequency   	Duration	Frequency
			Ft	Ft	Ft				
212:	 	 	 	 					
Rehobeth	   D	İ	! 	l I	 				 
	-	March	 				None	Very brief	Rare
	i	April			i i		None	Very brief	Occasional
	į	May			i i		None	Very brief	Occasional
	İ	June	i	i	0.0-0.3	Brief	Occasional	Very brief	Occasional
		July			0.0-0.3	Brief	Occasional	Very brief	Occasional
		August			0.0-0.3	Brief	Occasional	Very brief	Occasional
		September			0.0-0.3	Brief	Occasional	Very brief	Occasional
215:			 						
Viuda	D	I							
		Jan-Dec					None		None
Penistaja	   B	1	l I	l I	 				 
remscaja	 	  Jan-Dec	l I	l I	 		None	l	   None
		l Dec	! 	l I	 		l		
Rock outcrop		i	i İ	İ	i i				
-	i	Jan-Dec			i i		None		None
	į	Ì	j	j	į į		İ		İ
220:									
Hagerwest	В	1							
		Jan-Dec					None		None
		ļ			!!!				
Bond	D								
		Jan-Dec					None		None
225:		1	 	 			1		l I
Aquima	I   В	I I	l I	l I					l I
AQUIIIa	 	Jan-Dec	l I	l I	 		None	l	None
		l Dec	! 	l I			l		140110
Hawaikuh	C	i	İ	İ	i i		İ		
	i	Jan-Dec			i i		None		None
	į	Ì	j	j	į į		İ		İ
230:		[							
Sparank	D	1							
		January					None	Very brief	Occasional
	!	February					None	Very brief	Occasional
		March					None	Very brief	Occasional
		April					None	Very brief	Occasional
		July					None	Very brief	Occasional
	I	August		 	 		None	Very brief	Occasional
	I	September   October	 	 	 		None None	Very brief Very brief	Occasional Occasional
	 	November	 	 	 		None	Very brief   Very brief	Occasional
		December	 	 	 		None	Very brief   Very brief	Occasional
	!	1 -ccamer	!	!	!!!		1 140110	1 ACTA DITEL	1 OCCUPATORICAL

Table 18.--Water Features--Continued

		<u> </u>	Water	table	ļ	Ponding		Floor	ling
Map symbol and soil name	  Hydro-  logic  group	   Month   	Upper limit	Lower   limit 	Surface   water   depth	Duration	Frequency   	   Duration   	Frequency
		 	   Ft	Ft	   Ft	 	 		
230:		 	 	 		 	 	 	
San Mateo	В	<u> </u>	İ	j	i	İ	İ	İ	
		January					None	Very brief	Occasional
		February					None	Very brief	Occasional
		March		 			None	Very brief	Occasional
	 	April  July	 	 	 	 	None None	Very brief   Very brief	Occasional Occasional
	 	August		l			None	Very brief	Occasional
	İ	September	i	 			None	Very brief	Occasional
	į	October	j	j	j	i	None	Very brief	Occasional
		November					None	Very brief	Occasional
		December					None	Very brief	Occasional
Zia	   B	 		 		 			 
21a	l l	  March	 	l I	 	l l	None	   Very brief	   Rare
		April		 		 	None	Very brief	Rare
	İ	May	i	 			None	Very brief	Rare
	İ	June	j	i	j	j	None	Very brief	Rare
		July					None	Very brief	Rare
		August					None	Very brief	Rare
225				 		 			
235: Notal	l I D	 	l I	 		 	 	 	 
Nocal	5	March		 		 	None	Very brief	Rare
	İ	April	i				None	Very brief	Rare
	İ	May	j	i	j	j	None	Very brief	Rare
		June					None	Very brief	Rare
		July					None	Very brief	Rare
		August					None	Very brief	Rare
Hamburn	l l B	 	 	 		 	 	 	 
Hembern	5	January		 			None	Very brief	   Rare
	İ	February					None	Very brief	Rare
	İ	March					None	Very brief	Occasional
		April					None	Very brief	Occasional
		May				ļ	None	Very brief	Occasional
		June					None	Very brief	Occasional
	 	July  August	 	 		 	None None	Very brief   Very brief	Occasional   Occasional
	l I	September	 	l		l	None	Very brief	Rare
		October		 			None	Very brief	Rare
	İ	November			i	i	None	Very brief	Rare
		December					None	Very brief	Rare
240: Breadsprings		 		 		 			 
Breadsprings	C   	  March 	   	   	0.0-0.2	  Very brief 	   Rare 	   Extremely   brief	   Rare 
	 	April 	 	 	0.0-0.2	  Very brief 	Rare	Extremely brief	Rare
	j 	  May 	   	   	0.0-0.2	Brief	Rare	Extremely   brief	Rare
		June	j		0.0-0.2	Brief	Rare	Very brief	Rare
		July			0.0-0.2		Rare	Very brief	Rare
		August			0.0-0.2	Brief	Rare	Very brief	Rare
	I	I	I	I	I	I	I	I	I

Table 18.--Water Features--Continued

		   	Water	table	   	Ponding		Floor	ling
Map symbol and soil name	Hydro-  logic  group	Month 	Upper limit	Lower   limit 	Surface   water   depth	Duration   	Frequency   	Duration	Frequency
	-  	 	Ft Ft	Ft Ft	Ft	 	   	   	   
240:			 	[		 	 	 	 
Nahodish	-  D 	  March			0.0-0.2	  Very brief	   Rare	   Extremely   brief	   Rare
		  April 	   	 	0.0-0.2	  Very brief 	   Rare 	Extremely   brief	   Rare 
	į	May	i I	i	0.0-0.2	Brief	Rare	Extremely brief	Rare
	j	June	j	i	0.0-0.2	Brief	Rare	Very brief	Rare
	j	July	j		0.0-0.2	Brief	Rare	Very brief	Rare
	į	August			0.0-0.2	Brief	Rare	Very brief	Rare
241:						 	 	 	 
Mentmore	-  B	l Tara Dara					) )		N
		Jan-Dec 					None 		None
242:		İ	İ			ĺ		  -	
Gish	-  D	  June	 	 	 	 	   None	   Very brief	   Rare
		July		 	i		None	Very brief	Rare
		August		 	 	l   ===	None	Very brief	Rare
	İ	September					None	Very brief	Rare
Mandanana									
Mentmore	-  B 	  Jan-Dec	 	 		   	   None	   	   None
244:							 	 	 
Buckle	-  B	  Jan-Dec					   None	 	   None
		l					None		None
245:									
Buckle	-  B	  Jan-Dec					   None		   None
	į		į	į	į	į			
Gapmesa	-  B	  Jan-Dec				 	   None	 	   None
			İ				None		None
Barboncito	-   D	 					) )		N
		Jan-Dec 					None 		None
250:	į	į	į	į	į	į		į	
Hospah	-  D	Ton Dog				 	None		None
		Jan-Dec 					None 		None 
Skyvillage	- D	į	į	į	į	į	İ	į	
		Jan-Dec					None	 	None
Rock outcrop	-						 	 	 
		Jan-Dec					None		None
255:		 	! 	[	 	 	 	 	 
Farview	- D	<u> </u>	i	i	į	į	İ	İ	
	į	Jan-Dec				ļ	None		None
Rock outcrop	 -	 	[ [	 		 	 	 	 
		  Jan-Dec					None		None

Table 18.--Water Features--Continued

			Water	table		Ponding		Floo	ding
Map symbol and soil name	Hydro-  logic  group	Month   	Upper   limit 	Lower   limit 	Surface   water   depth	Duration	Frequency   	Duration	Frequency   
			-    Ft	Ft F	Ft				
258: Eagleye	     D	      Jan-Dec		     			     None	   	     None
Atchee	   D 	    Jan-Dec		   			     None		     None
Rock outcrop	   	    Jan-Dec 		   	   	   	   None	   	     None
260: Quarries and Pits	   	      Jan-Dec 		     	   		     None		     None
261: Coal Mine Land	  -  	    Jan-Dec 		     	   		     None	   	     None
265: Uranium Mined Lands	   	    Jan-Dec 		     	   	   	     None		     None
270: Alesna	   C 	    Jan-Dec 	   	     	 		     None		     None
Rock outcrop275: Eldado	     B	      Jan-Dec	     	     	 		     None		     None
280: Azabache	     D	      Jan-Dec		     	     	   	     None		     None
290: Rock outcrop	  -   	      Jan-Dec 		     			     None	   	     None
Westmion	D	  Jan-Dec		   			None		None
Skyvillage	 -  D 	    Jan-Dec 		     		   	   None	   	   None
291: Rock outcrop	   	    Jan-Dec 		     	   	   	     None	   	     None
Eagleye	D	  Jan-Dec		   			   None		None
Atchee	   D 	    Jan-Dec 		   		   	   None	   	   None

Table 18.--Water Features--Continued

	   	   	Water	table	   	Ponding		Flood	ding
Map symbol and soil name	  Hydro-  logic  group	Month   	Upper			Duration	Frequency   	   Duration   	Frequency 
		 	Ft	Ft	   Ft			 	 
300: Regracic	     D 	      Jan-Dec 			     		       None	     	       None
305: Celavar	   C 	    Jan-Dec			   		     None	     	     None
Atarque	   D 	    Jan-Dec 			       		     None 	     	     None 
308: Fikel	   C 	    Jan-Dec 	 		   		     None	   	     None
Venzuni	D	  June	 				   None	   Very brief	   Rare
	   	July  August 	     		     		None   None	Very brief   Very brief 	Rare   Rare 
310: Parkelei	   B 	    Jan-Dec	 		   		     None	   	     None
312: Bluewater	     D	   	     		   		   	   	   
	į	January	2.0-4.0		i i		None		None
		February	2.0-4.0				None		None
			2.0-4.0				None	Very brief	Rare
			2.0-4.0				None	Very brief	Rare
			2.0-4.0				None	Very brief	Rare
		!	2.0-4.0				None	Very brief	Rare
	 	1			 		None None	Very brief   Very brief	Rare   Rare
	 	September			 		None		None
			2.0-4.0		 		None	l 	None
	İ	November			 		None		None
		December	2.0-4.0		i i		None		None
315: Flugle	     B 	      Jan-Dec			     		     None	     	     None
Fragua	   B 	    Jan-Dec 			       		   None	     	     None 
316: Royosa	   A 	    Jan-Dec 	 		    		     None	   	   None

Table 18.--Water Features--Continued

		[ [	Water	table		Ponding		Floo	ding
Map symbol and soil name	Hydro-  logic  group	Month   	Upper   limit 	Lower   limit 	Surface   water   depth	Duration	Frequency   	Duration	Frequency   
	-  		Ft	Ft	Ft				
317: Highdye	     D		   	 					   
ntgliaye		  Jan-Dec 	 	 		   	None		   None
Evpark	   B 	    Jan-Dec	   				   None		     None
Bryway	   C 	    Jan-Dec	   	   	   	   	   None	   	     None
320: Parkelei	     B		 						   
rarkerer		  Jan-Dec 	 	 		   	None		   None
Fraguni	   B 	    Jan-Dec	   				   None		     None
325: Venzuni	     D	   	   	   	   	   	   	   	   
		March					None	Very brief	Rare
		April					None	Very brief	Rare
		May					None	Very brief	Rare
		June					None	Very brief	Rare
		July  August					None None	Very brief   Very brief	Rare   Rare
332:		 	 	 					 
Evpark	B   	  Jan-Dec 	   	 	 	   	None	   	   None 
Arabrab	D	  Jan-Dec					None		   None
335:		ļ	 	ļ ļ				 	 
Venadito	D								
		March	 			 	None   None	Very brief	Occasional   Occasional
		April  May	 		 	 	None	Very brief   Very brief	Occasional
	i i	June	 			 	None	Very brief	Occasional
	i	July					None	Very brief	Frequent
	į i	August	j	j	i i		None	Very brief	Frequent
336: Nuffel	     B	İ	   						   
1/07.1.6.1		  March	 			 	None	Very brief	   Frequent
	i	April	 				None	Very brief	Frequent
	i	May					None	Very brief	Occasional
	İ	June	i	j	i i		None	Very brief	Occasional
		July					None	Very brief	Frequent
		August					None	Very brief	Frequent
		September					None	Very brief	Occasional
		October					None	Very brief	Occasional

Table 18.--Water Features--Continued

			Water	table		Ponding		Floo	ding
Map symbol and soil name	Hydro-  logic  group	Month 	Upper   limit	Lower   limit 	Surface    water   depth	Duration	Frequency   	Duration	Frequency
	-  		Ft	Ft	Ft		·	 	 
336:				 		 		 	 
Venadito	- D								
		March					None	Very brief	:
		April					None	Very brief	Frequent
		May					None	Very brief	Occasional
		June					None	Very brief	Occasional
		July					None	Very brief	Frequent
		August					None	Very brief	Frequent
		September					None	Very brief	Occasional
		October					None	Very brief	Occasional
338:		1	1	 				 	 
Zyme	- D	i	İ				i	 	! 
2,110	-	Jan-Dec					None		None
	i	İ	İ	İ	i i		İ		İ
Lockerby	- D	İ	İ	ĺ	į į		ĺ		ĺ
		Jan-Dec					None		None
345:									
Rock outcrop	-								
	İ	Jan-Dec			i i		None		None
	İ	İ	İ	ĺ	į į		ĺ		ĺ
Tuces	- D								
		Jan-Dec					None		None
350:									
Toldohn	- D								
		Jan-Dec					None		None
Vessilla	- D								
		Jan-Dec					None		None
Rock outcrop									
		Jan-Dec					None		None
351:									
Rock outcrop	-								
		Jan-Dec					None		None
Vessilla	- D								
		Jan-Dec					None		None
		!		!	! !		!		
352:		!	!	!	! !		!		
Zia	-  B	!	!	!	! !		!		
		Jan-Dec					None		None
0.50		1					ļ		
353:		1					ļ		
Mido	-   A				!!!				
		Jan-Dec					None		None
		!	!	ļ			ļ	ļ.	
354:		!	!	ļ			ļ	ļ.	
Knifehill	-  C								
		Jan-Dec					None		None
						l	1		

Table 18.--Water Features--Continued

	   	   	Water	table	   	Ponding		Floor	ding
Map symbol and soil name	  Hydro-  logic  group	   Month   	Upper limit	Lower   limit 	Surface   water     depth	Duration	Frequency   	Duration	Frequency
			Ft	Ft	Ft				 
355: Rizno	     D 	    Jan-Dec	     	     	 		     None	     	     None
Tekapo	   D 	    Jan-Dec 	   	     	   		     None 	     	     None 
Rock outcrop	   	  Jan-Dec 	   	   	     		   None 	   	   None 
357: Heshotauthla	   D		 	 	j i			 	
		March					None	Very brief	Occasional
		April					None	Very brief	Occasional
		May					None	Very brief	Rare
		June	 	 			None	Very brief   Very brief	•
	 	July  August	 	 	 		None None	Very brief   Very brief	Occasional Occasional
	 	September		l	 		None	Very brief	Occasional
	 	October	l 	l I			None	Very brief	Occasional
360: Hosta	     C 	      Jan-Dec 	     	     	     		       None	       	       None 
Concho	C	į	j	j	į į		İ	İ	İ
		March					None	Very brief	Rare
		April		ļ			None	Very brief	Rare
		May					None	Very brief	Rare
		June					None	Very brief	:
		July					None	Very brief	Rare
	 	August	 	 			None	Very brief 	Rare
361: Monpark	     D 	      Jan-Dec 	     	     	   		     None	   	     None
365: Vessilla	     D 	      Jan-Dec	     	     	   		     None	   	     None
Rock outcrop		    Jan-Dec 	   	   	     		   None 	   	     None 
366: Bosonoak	   B 	    Jan-Dec 	   	     			     None 	     	     None
367: Chunkmonk	   C 	    Jan-Dec 	     	     			     None	     	     None 

Table 18.--Water Features--Continued

			Water table		Ponding			Flooding	
Map symbol and soil name	  Hydro-  logic  group	Month     	Upper   limit 	Lower   limit 	Surface   water   depth	Duration	Frequency   	Duration	Frequency   
	_    		   Ft	Ft	   Ft		   	   	   
368: Simitarq	- D	    Jan-Dec		     	     		     None		     None
Celavar	  -  B 	    Jan-Dec		   	   		     None		     None
375: Todest	  -   B	      Jan-Dec		     	     		       None		     None
Shadilto	-   D	    Jan-Dec 		   	   	   	     None 	   	     None
376: Todest	  -  B 	      Jan-Dec 		     	   		     None		     None
380: Berryhill	 -  D 	    Jan-Dec		     	   		     None		     None
Casamero	- D	    Jan-Dec		   	 		   None	 	   None
385: Mcorreon	-  C	    Jan-Dec		     	   		     None		     None
Rock outcrop		    Jan-Dec 		   	   	   	   None 	   	   None 
390: Banquito	-  B	    Jan-Dec		     	   		     None	   	     None
395: Cabezon	 -  D 	    Jan-Dec 		     	       	   	     None	   	     None
Mcorreon	- C	  Jan-Dec 		   	     		   None 		   None
400: Shoemaker	  -  B 	    Jan-Dec		   	   		     None	   	     None
Stozuni	-   D	  Jan-Dec		   	   		   None	 	   None 
403: Valnor	-  C	      Jan-Dec 		     	   		     None		     None
Techado	- D	    Jan-Dec 		   	   	   	   None 		   None 

Table 18.--Water Features--Continued

		 	Water table		Ponding			Flooding	
Map symbol and soil name	Hydro-  logic  group	Month   	Upper     limit	Lower	Surface    water     depth	Duration	Frequency   	Duration	Frequency
	I		Ft	Ft	   Ft				
404:		 							
Rock outcrop		İ	i i		i i		j i		
		Jan-Dec					None		None
Techado	 	 							
		Jan-Dec	i i		i i		None		None
		[							
Stozuni	D	  Jan-Dec					None		None
		Jan-Dec					None		None
405:	į	İ	į į		į į		į į		
Fortwingate	C		!!!		!!!				
		Jan-Dec					None		None
Owlrock	D				i i				
	İ	Jan-Dec	j j		j j		None		None
406:									
400: Polich	C	 							
		March	0.5-5.0		i i		None	Long	Frequent
	İ	April	0.5-5.0		j j		None	Long	Frequent
	ļ	May	0.5-5.0				None	Long	Frequent
		June  September	0.5-5.0				None None		None None
		October	3.3-5.0				None		None
	į	İ	į į		į į		į į		İ
407: Cinnadale									
Cinnadale	ם ן	  Jan-Dec	 		 		None		None
	i		i i		i i				
Heckly	C	[	[ ]						
		Jan-Dec					None		None
408:	l I	 							
Mirabal	B	İ	i i		i i		i i		
		Jan-Dec					None		None
Zuni	C								
Zuiii		  Jan-Dec					None		None
	į	į	į į		į į		į į		İ
409:					!!!				
Rauster	C	  Jan-Dec			 		None		None
			i i		i i		10110		None
Rock outcrop	i	İ	į į		į į		į į		İ
		Jan-Dec					None		None
410:		 							
Montillo	C		i i		j				
	į	Jan-Dec	ļ i		ļ i		None		None
m11									
Tsoodzil	C	  Jan-Dec					None		None
	i		i i		i i				

Table 18.--Water Features--Continued

		<u> </u>	Water	table	 [	Ponding		Floo	ding
Map symbol and soil name	  Hydro-  logic  group 	   Month   	   Upper   limit 			Duration	Frequency   	Duration	Frequency   
			Ft	Ft	Ft				<del></del>
411: Ligocki	     C 	      Jan-Dec	     	     	     		     None		     None
Robolata	   C   	  March  April  May	   	   	     	 	None   None   None	Brief Brief Brief	Occasional   Occasional   Occasional
412: Rock outcrop	     	      Jan-Dec	     	     	 		       None		       None
Rionutria	   C 	    Jan-Dec 	     	     	   		     None		     None 
Zaster	, С П	  Jan-Dec 	   	   	     		   None		   None 
413: Morclay	   D 	    Jan-Dec 	   	   	   		   None	   	     None
414: Zunalei	   B 	    Jan-Dec	     	     	   		     None		     None
Corzuni	B   B	    Jan-Dec 	   	   			   None	   	     None
415: Tsoodzil	   C 	      Jan-Dec 	     	     	       		     None		     None
Rubble Land	A   	  Jan-Dec 	   	   	     		   None		   None
416: Rock outcrop	   	    Jan-Dec 	   	   	   		   None	   	     None
Bluesky	   D 	  Jan-Dec 	 	   	 		   None		   None
418: Asaayi	     D 	      Jan-Dec 	     	     	   		     None		     None 
Osoridge	   D 	  Jan-Dec 	   	   	     		   None		     None 

Table 18.--Water Features--Continued

		 	Water	table	Ponding			Flooding	
Map symbol and soil name	Hydro-  logic  group	Month     	Upper   limit	Lower   limit 	Surface   water   depth	Duration	Frequency   	Duration	Frequency
			Ft	Ft	Ft				
419:									
Fortwingate	- C								
	į	Jan-Dec			j j		None		None
Cinnadale	   D	 	 						
	į	Jan-Dec	ļ		j j		None		None
Rock outcrop		 	 						 
	į	Jan-Dec	ļ		j j		None		None
420:		 	 	 					 
Seco	C	į	į		į į				į
		March					None	Very brief	Rare
		April  May					None None	Very brief   Very brief	Rare   Rare
		June					None	Very brief	Rare
	i	July			i i		None	Very brief	Rare
		August					None	Very brief	Rare
425:		 	 	 					
Montillo	C	į	į	į	j j		į		İ
		Jan-Dec					None		None
Canoneros	   D	 		 					
	į	Jan-Dec	i		j j		None		None
430:		 	 	 					 
Montillo	C	į	į	į	į į		į		į
		Jan-Dec					None	 	None
435:		İ	İ		i i				
Tsoodzil	C								
		Jan-Dec 					None		None
Amcec	В	İ	İ	İ	i i		İ		
		Jan-Dec		 			None	 	None
440:			İ		i i				
Chivato	D					D:	  Occasional	 	77
		July  August			0.2-0.8   0.2-0.8	Brief Brief	Occasional		None   None
		September			0.2-0.8		Occasional		None
		October			0.2-0.8		Occasional		None
525 <b>:</b>		 							
Silcat	D								
	į	Jan-Dec			į į		None		None
550:		 	1						 
bryway	C								 
± ·- ±	į -	Jan-Dec		i	i i		None		None
		ļ		!	ļ į				ļ
Galzuni	-  C	  .Tan_Doc					None	 	None
	1	Jan-Dec					None	 I	None

Table 18.--Water Features--Continued

	   	   	Water	table	   	Ponding		Floor	ding
Map symbol and soil name	  Hydro-  logic  group	   Month   	Upper   limit	Lower   limit 	Surface   water     depth	Duration	Frequency   	Duration	Frequency   
			Ft	Ft	Ft				   
555: Parkelei	     B	      Jan-Dec	     	     	     		       None	     	       None
Evpark	   B 	    Jan-Dec	   	   	 		     None	   	     None
560: Flugle	     B	      Jan-Dec	     	     	     		       None	     	     None
560: Teczuni	     C	      Jan-Dec	     	     	     		       None	     	     None
561: Flugle	     B	      Jan-Dec	     	     	     		     None	     	     None
Plumasano	   B 	    Jan-Dec	   	   	   		     None	   	     None
565: Plumasano	     B	      Jan-Dec	     	     	     		     None	     	     None
Rock outcrop	   	    Jan-Dec	   	   	   		     None	   	     None
566: Bamac	     A	      Jan-Dec	     	     	     		     None	     	     None
575: Ramah	     B	      Jan-Dec	     	     	     	   	     None	     	     None
Pescado	   D 	    Jan-Dec 	     	     			     None 	     	     None 
	.								

Table 19.--Classification of the Soils

Soil name	Family or higher taxonomic class
Alesna	  Fine, mixed, superactive, mesic Ustic Calciargids
	Loamy-skeletal, mixed, superactive, frigid Vitrandic Haplustalfs
	Fine-loamy, mixed, superactive, mesic Ustic Haplocambids
	Loamy, mixed, superactive, mesic Lithic Haplustalfs
	Loamy, mixed, active, frigid Lithic Haplustalfs
Atarque	Loamy, mixed, superactive, mesic Lithic Haplustalfs
Atchee	Loamy-skeletal, mixed, active, calcareous, mesic Lithic Ustic Torriorthents
Azabache	Fine-loamy, mixed, superactive, mesic Typic Natrargids
Bamac	Sandy-skeletal, mixed, mesic Aridic Ustorthents
Banquito	Fine-loamy, mixed, superactive, mesic Calcidic Haplustalfs
Barboncito	Loamy, mixed, superactive, mesic Lithic Ustic Haplargids
Benally	Fine-loamy, mixed, superactive, mesic Typic Natrargids
	Fine, mixed, superactive, mesic Chromic Gypsitorrerts
	Coarse-loamy, mixed, superactive, mesic Ustic Haplargids
Blancot	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Mixed, frigid Lithic Ustipsamments
	Fine-loamy, mixed, superactive, mesic Pachic Argiustolls
	Loamy, mixed, superactive, mesic Lithic Ustic Haplargids
	Fine-loamy, mixed, superactive, mesic Aridic Haplustalfs
	Fine-loamy, mixed, superactive, mesic Ustifluventic Haplocambids
	Fine, mixed, superactive, mesic Aridic Paleustalfs
	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Clayey, smectitic, mesic Lithic Argiustolls
	Mixed, mesic Ustic Torripsamments
	Clayey, mixed, superactive, frigid Lithic Argiustolls
	Clayey, smectitic, mesic, shallow Leptic Haplotorrerts
	Fine-loamy, mixed, superactive, mesic Aridic Haplustalfs
	Clayey, mixed, active, calcareous, mesic, shallow Typic Torriorthents
	Fine, mixed, active, frigid Typic Haplusterts
	Loamy-skeletal, mixed, superactive, mesic Lithic Haplustalfs
	Loamy-skeletal, mixed, superactive, frigid Lithic Haplustepts
	Fine, mixed, superactive, mesic Aridic Argiustolls
	Fine, mixed, superactive, mesic Pachic Argiustolls  Coarse-loamy, mixed, superactive, mesic Typic Haplustalfs
	Coarse-loamy, mixed, superactive, mesic Typic naptustaris Coarse-loamy, mixed, superactive, calcareous, mesic Ustic Torriorthents
	Coarse-roamy, mixed, superactive, carcareous, mesic ostic formorthems Fine-loamy, mixed, active, mesic Typic Haplargids
	Fine-loamy, mixed, active, mesic typic napitalistics Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Clayey, mixed, active, nonacid, mesic, shallow Ustic Torriorthents
	Fine-loamy over sandy or sandy-skeletal, mixed, superactive, mesic Ustic
	Calciargids
	Fine-loamy, mixed, superactive, mesic Ustic Natrargids
	Sandy, mixed, mesic Oxyaquic Torrifluvents
	Loamy, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents
	Fine-loamy, mixed, superactive, mesic Aridic Haplustalfs
	Fine-loamy, mixed, superactive, mesic Typic Natrargids Loamy, mixed, superactive, calcareous, mesic Lithic Torriorthents
	Loamy, mixed, superactive, calcareous, mesic Lithic Torriorthents Loamy, mixed, active, calcareous, mesic Lithic Ustic Torriorthents
	Loamy, mixed, active, calcareous, mesic Lithic ostic forfiorthents Fine, mixed, superactive, mesic Aridic Haplustalfs
	Fine, mixed, superactive, mesic Aridic Haplustalis Fine-loamy, mixed, superactive, mesic Aridic Haplustalis
	Fine-roamy, mixed, superactive, mesic Aridic naplustairs Fine, mixed, superactive, frigid Vertic Haplustalfs
	Coarse-loamy, mixed, superactive, mesic Aridic Haplustalfs
	Coarse-loamy, mixed, superactive, mesic Aridic Haplustalis
	Coarse-loamy, mixed, superactive, mesic Arture naprustaris Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torriorthents
	Coarse-roamy, mixed, superactive, calcaleous, mesic typic formorthems Fine, mixed, superactive, mesic Aridic Paleustalfs
	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Fine rounty mixed, Superactive, mesic Ustic Haplocambids
	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torrifluvents

Table 19.--Classification of the Soils--Continued

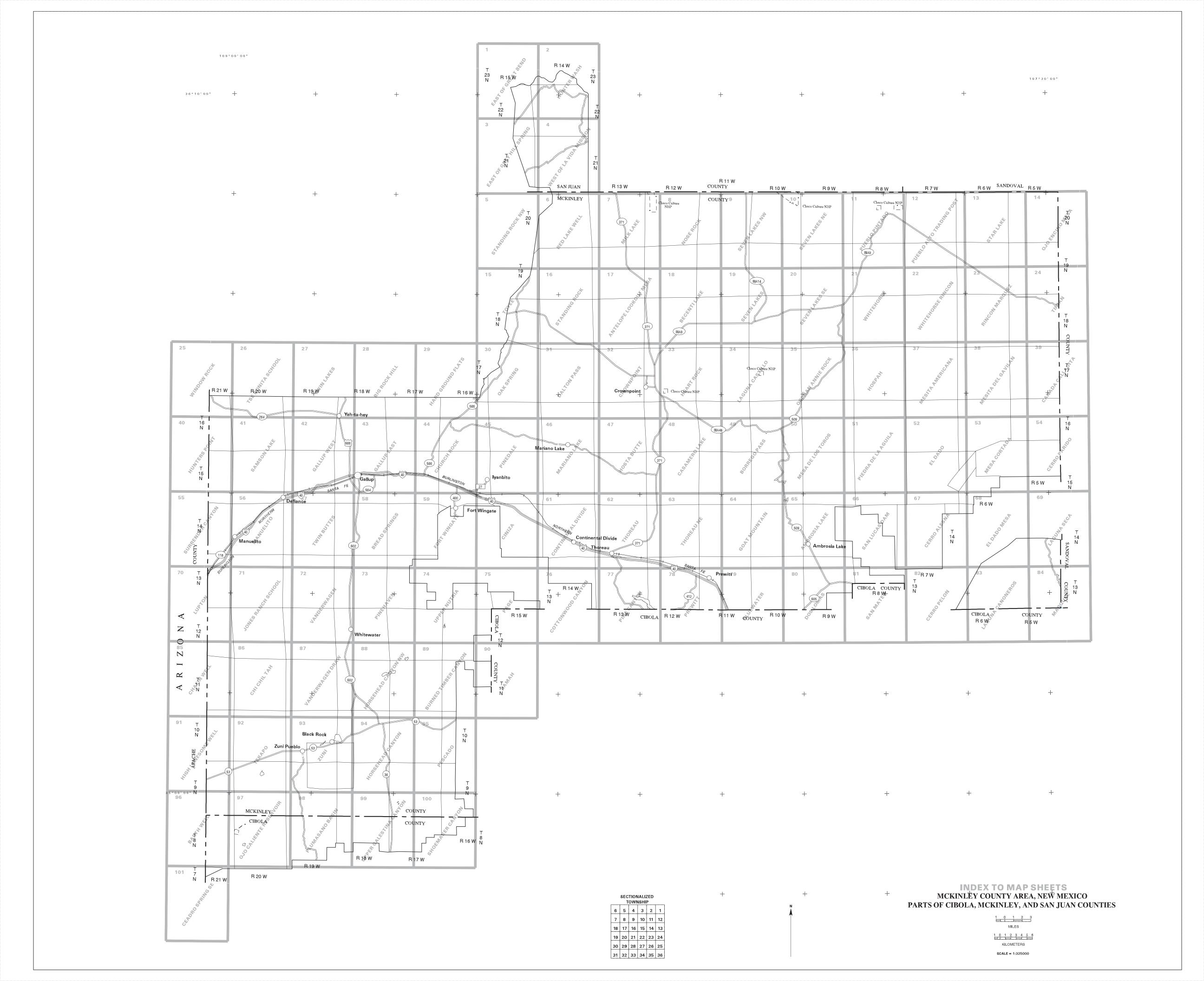
Soil name	Family or higher taxonomic class
Hawai kuh	   Fine, mixed, superactive, mesic Ustic Haplargids
	Fine, mixed, superactive, frigid Typic Haplustalfs
	Fine, mixed, superactive, frigid Typic naplustaris
	Clayey, mixed, superactive, mesic Lithic Haplustalfs
	Clayey, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthen
	Fine, mixed, superactive, mesic Aridic Haplustalfs
	Loamy, mixed, superactive, mesic, shallow Typic Natrargids
	Loamy, mixed, active, mesic Lithic Haplargids
	Fine, mixed, superactive, mesic Pachic Argiustolls
	Sandy, mixed, mesic Ustic Torrifluvents
	Loamy, mixed, superactive, mesic, shallow Leptic Haplogypsids
	Fine, mixed, superactive, frigid Typic Haplustalfs
	Fine, smectitic, mesic Ustertic Haplocambids
Marianolake	Fine-loamy, mixed, active, mesic Ustic Haplargids
Mcorreon	Fine, smectitic, mesic Calcidic Argiustolls
Mentmore	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
Mido	Mixed, mesic Ustic Torripsamments
Mirabal	Loamy-skeletal, mixed, superactive, nonacid, frigid Typic Ustorthents
	Loamy-skeletal over fragmental, mixed, active, mesic Typic Haplocalcids
	Fine, smectitic, mesic Leptic Haplotorrerts
	Fine, mixed, superactive, frigid Vertic Argiustolls
	Fine, mixed, superactive, frigid Chromic Haplusterts
	Fine, mixed, superactive, mesic Ustifluventic Haplocambids
	Fine-loamy, mixed, active, mesic Typic Haplargids
	Fine, mixed, active, calcareous, mesic Typic Torriorthents
	Fine-silty, mixed, superactive, calcareous, mesic Ustic Torrifluvents
	Fine, mixed, superactive, mesic Pachic Argiustolls
	Fine-loamy, mixed, superactive, mesic Aridic Haplustalfs
	Clayey, mixed, superactive, frigid Lithic Haplustalfs
	Loamy-skeletal, mixed, superactive, frigid Lithic Argiustolls
	Fine-loamy, mixed, superactive, mesic Aridic Haplustalfs
	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Loamy, mixed, superactive, mesic Lithic Haplustalfs
	Coarse-loamy, mixed, superactive, mesic Aridic Haplustepts
Polich	Fine-loamy, mixed, superactive, frigid Cumulic Haplustolls
Querencia	Fine-loamy, mixed, superactive, mesic Ustic Haplocambids
Ramah	Fine, mixed, superactive, mesic Calcidic Haplustalfs
Rauster	Fine, mixed, superactive, frigid Vertic Argiustolls
Razito	Mixed, mesic Typic Torripsamments
	Fine-loamy, mixed, superactive, mesic Ustic Haplargids
	Fine, mixed, superactive, mesic Aridic Paleustalfs
	Fine, mixed, superactive, mesic Chromic Gypsitorrerts
	Clayey-skeletal, mixed, superactive, frigid Typic Argiustolls
	Loamy, mixed, superactive, calcareous, mesic Lithic Ustic Torriorthents
	Fine, mixed, superactive, frigid Pachic Argiustolls
	Mixed, mesic Aridic Ustipsamments
	Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torrifluvents
	Fine, mixed, superactive, carcareous, mesic ostic forillitavents
	Very-fine, mixed, superactive, frigid Vertic Argiustolls
	Loamy, carbonatic, mesic Lithic Calciustepts
	Coarse-loamy, mixed, superactive, mesic Typic Haplargids
	Fine-loamy, mixed, superactive, frigid Typic Haplustalfs
	Fine, mixed, superactive, mesic Aridic Haplusterts
	Loamy, mixed, superactive, mesic Lithic Haplustalfs
	Loamy, mixed, superactive, calcareous, mesic Lithic Ustic Torriorthents
	Fine, mixed, superactive, calcareous, mesic Ustic Torrifluvents
Sparham	Fine, mixed, superactive, calcareous, mesic Aridic Ustifluvents
Starlako	Fine, mixed, superactive, mesic Ustic Natrargids

Table 19.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Ctomm:	
	Fine-loamy, mixed, superactive, honactd, frigid littlic distortients
	Clayey, mixed, superactive, carcareous, mesic ostic forfilluvents
	Fine, mixed, superactive, mesic Calcidic Haplustalfs
	Clayey, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents   Fine, mixed, superactive, mesic Aridic Haplustalfs
	·
	Coarse-loamy, mixed, superactive, mesic Ustic Haplargids
	Fine-loamy, mixed, superactive, mesic Calcidic Haplustalfs
	Clayey, mixed, superactive, nonacid, mesic, shallow Aridic Ustorthents
	Fine, smectitic, frigid Vertic Argiustolls
	Fine-loamy, mixed, superactive, calcareous, mesic Ustic Torriorthents
	Fine, mixed, superactive, mesic Aridic Haplustepts
	Fine, mixed, superactive, frigid Typic Haplustalfs
	Very-fine, smectitic, mesic Chromic Haplotorrerts
	Very-fine, smectitic, mesic Aridic Haplusterts
	Loamy, mixed, active, calcareous, mesic Aridic Lithic Ustorthents
	Clayey, mixed, superactive, mesic Lithic Ustic Haplargids
	Clayey, mixed, superactive, calcareous, mesic, shallow Ustic Torriorthents
	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Torrifluvents
	Loamy-skeletal, mixed, superactive, mesic Typic Calciustolls
	Coarse-loamy, mixed, superactive, calcareous, mesic Ustic Torriorthents
Zunalei	Fine-loamy, mixed, superactive, mesic Typic Haplustalfs
Zuni	Fine, mixed, superactive, frigid Typic Haplustalfs
Zuniven	Fine-silty, mixed, superactive, calcareous, mesic Aridic Ustifluvents
Zyme	Clayey, smectitic, calcareous, mesic, shallow Ustic Torriorthents

## **NRCS Accessibility Statement**

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by email at helpdesk@helpdesk.its.nrcs.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.



SPECIAL SYMBOLS FOR SOIL

SURVEY AND SSURGO

## **SOIL LEGEND**

## **CONVENTIONAL AND SPECIAL SYMBOLS LEGEND**

**CULTURAL FEATURES** 

				BOUNDARIES		MISCELLANEOUS CULTURAL FEATURES		SOIL DELINEATIONS AND SYMBOLS	10 111
				National, state, or province		Farmstead, house (omit in urban areas)	•	LANDFORMFEATURES	
						,	+	ESCARPMENTS	
SYMBOL		SYMBO		County or parish		Church	•	ESCARPIMENTS	
8 10	Water Tsosie-Councelor-Blancot fine sandy loams, 1 to 3 percent slopes	310 312	Parkelei sandy loam, 1 to 8 percent slopes Bluewater loam, 0 to 1 percent slopes	Minor civil division		School	i	Bedrock	YATAYATATATATATATATATATATATAT
11 12	Doakum-Betonnie complex, 1 to 8 percent slopes Calladito-Elias association, 1 to 6 percent slopes	315 316	Flugle-Fragua complex, 1 to 10 percent slopes Royosa loamy fine sand, 1 to 15 percent slopes	Reservation (national forest or park,		Others Bulliains (fabral)	. Mt	Other than bedrock	***************************************
13 14	Councelor-Calladito complex, 1 to 8 percent slopes Councelor-Eslendo-Calladito complex, 2 to 25 percent slopes	317 320	Highdye-Evpark-Bryway complex, 2 to 20 percent slopes Parkelei-Fraguni complex, 1 to 8 percent slopes	state forest or park)		Other Religion (label)	* Carmel	SHORT STEEP SLOPE	
16 22	Starlake clay, 1 to 3 percent slopes Querencia-Lavodnas association, 2 to 15 percent slopes	325 332	Venzuni silty clay, 1 to 3 percent slopes	Land grant Limit of soil survey (label)		Located object (label)	<ul><li>Ranger Station</li></ul>		
30	Orlie-Tinian complex, 1 to 6 percent slopes	335	Evpark-Arabrab complex, 2 to 6 percent slopes Venadito clay, 1 to 3 percent slopes	and/or denied access area		Tank (label)	Petroleum	GULLY	~~~~
40 42	Nuffel silt loam, 0 to 2 percent slopes Suwanee clay loam, 0 to 2 percent slopes	336 338	Nuffel-Venadito complex, 1 to 3 percent slopes Zyme-Lockerby association, 5 to 35 percent slopes	Field sheet matchline & neatline		rain (label)	_	DEPRESSION, closed	•
44 45	Suwanee clay, 0 to 1 percent slopes Nutreeah clay loam, 0 to 2 percent slopes	345 350	Rock outcrop-Tuces complex, 20 to 70 percent slopes Toldohn-Vessilla-Rock outcrop complex, 8 to 35 percent slopes	Previously Published Survey		Lookout Tower	×	SINKHOLE	<b>♦</b>
47 49	Conchovar clay loam, 0 to 1 percent slopes Concho clay loam, 0 to 2 percent slopes	351 352	Rock outcrop-Vessilla complex, 35 to 70 percent slopes	OTHER BOUNDARY (label) Airport, airfield	2 2 4 1 4 1 4	Oil and/or Natural Gas Wells	A	EXCAVATIONS	
51	Kwakina loamy fine sand, 0 to 2 percent slopes	353	Zia sandy loam, 1 to 5 percent slopes Mido loamy fine sand, 1 to 6 percent slopes		Carriery I T I B	on and or realizable viole	_ ×	EXCAVATIONS	
52 53	Zuniven loamy fine sand, 0 to 2 percent slopes Hawaikuh clay loam, 0 to 2 percent slopes	354 355	Knifehill loam, 1 to 5 percent slopes Rizno-Tekapo-Rock outcrop complex, 2 to 45 percent slopes	Cemetery	Copera	Windmill	Δ	PITS	
54 55	Venadito clay, saline, 0 to 2 percent slopes Sparham clay loam, 0 to 2 percent slopes	357 360	Heshotauthla clay, 0 to 1 percent slopes Hosta-Concho association, 0 to 5 percent slopes	City/county park		Lighthouse	Ä	Borrow pits	
60	Redpen sandy clay loam, 0 to 2 percent slopes	361	Monpark silty clay, 2 to 8 percent slopes	STATE COORDINATE TICK 1 890 000 FEET		_ig0000		Gravel pit	×
100 110	Norkiki-Kimnoli complex, 1 to 8 percent slopes Benally-Fruitland association, 1 to 5 percent slopes	365 366	Vessilla-Rock outcrop complex, 2 to 15 percent slopes Bosonoak loam, 1 to 5 percent slopes	LAND DIVISION CORNER	L + + +	HYDROGRAPHIC FEAT	URES	•	
111 115	Yelives fine sandy loam, 1 to 3 percent slopes Razito-Shiprock complex, 3 to 8 percent slopes	367 368	Chunkmonk very gravelly fine sandy loam, 2 to 10 percent slopes Simitarq-Celavar sandy loams, 2 to 8 percent slopes	(section and land grants)	+ -			Mine or quarry	*
116	Fajada-Huerfano-Benally complex, 1 to 5 percent slopes	375	Todest-Shadilto complex, 2 to 8 percent slopes	GEOGRAPHIC COORDINATE TICK	+	STREAMS		LANDFILL	$\bigcirc$
118 120	Farb-Chipeta-Rock outcrop complex, 2 to 30 percent slopes Doak-Shiprock complex, 1 to 8 percent slopes	376 380	Todest fine sandy loam, 2 to 8 percent slopes Berryhill-Casamero clays, 2 to 10 percent slopes	TRANSPORTATION		Perennial, double line		MISCELLANEOUS SURFACE FEATURES	
121 122	Badland Rock outcrop-Farb complex, 2 to 8 percent slopes	385 390	Mcorreon-Rock outcrop complex, 10 to 40 percent slopes Banquito very fine sandy loam, 1 to 3 percent slopes	Divided roads					
125 130	Sanfeco fine sandy loam, 0 to 2 percent slopes Chipeta-Badland-Moncisco complex, 2 to 45 percent slopes	395 400	Cabezon-Mcorreon complex, 2 to 8 percent slopes Shoemaker-Stozuni complex, 2 to 8 percent slopes	Other reade		Perennial, single line	Label only	Blowout	·
150	Riverwash-Escawetter association, 0 to 1 percent slopes	403	Valnor-Techado complex, 2 to 25 percent slopes	Other roads		Intermittent	Label only	Clay spot	*
160 205	Escawetter-Riverwash-Razito association, 0 to 5 percent slopes Penistaja-Tintero complex, 1 to 10 percent slopes	404 405	Rock outcrop-Techado-Stozuni complex, 5 to 60 percent slopes Fortwingate-Owlrock complex, 2 to 8 percent slopes	Trail		Drainage end	Label only	Gravelly spot	•
208 210	Marianolake fine sandy loam, 1 to 8 percent slopes  Marianolake-Skyvillage complex, 1 to 8 percent slopes	406 407	Polich silt loam, 0 to 3 percent slopes Cinnadale-Heckly association, 5 to 40 percent slopes	ROAD EMBLEM & DESIGNATIONS			Labor orny		^
212	Rehobeth silty clay loam, 0 to 1 percent slopes	408	Mirabal-Zuni complex, 1 to 40 percent slopes		173 79	DRAINAGE AND IRRIGATION		Lava flow	
215 220	Viuda-Penistaja-Rock outcrop complex, 1 to 5 percent slopes Hagerwest-Bond fine sandy loams, 1 to 8 percent slopes	409 410	Rauster-Rock outcrop complex, 5 to 35 percent slopes Montillo-Tsoodzil complex, 5 to 35 percent slopes	Interstate	~~~	Double-line canal (label)	CANAL	Marsh or swamp	<b>₩</b>
225 230	Aquima-Hawaikuh silt loams, 1 to 5 percent slopes Sparank-San Mateo-Zia complex, 0 to 3 percent slopes	411 412	Ligocki-Robolata complex, 1 to 5 percent slopes  Rock outcrop-Rionutria-Zaster association, 15 to 80 percent slopes	Federal	287 (410) 224	Perennial drainage and/or irrigation	Label only	Rock outcrop (includes sandstone and sha	ıle) ∨
235 240	Notal-Hamburn complex, 0 to 2 percent slopes Breadsprings and Nahodish soils, 0 to 2 percent slopes	413 414	Morclay silty clay, 1 to 5 percent slopes Zunalei-Corzuni loamy fine sands, 2 to 10 percent slopes	State	(52) (52)	ditch	Edber only	Saline spot	+
241	Mentmore loam, 1 to 8 percent slopes	415	Tsoodzil-Rubble land complex, 10 to 55 percent slopes		347	Intermittent drainage and/ or irrigation	Label only	Sandy spot	::
242 244	Gish-Mentmore complex, 1 to 8 percent slopes Buckle fine sandy loam, 1 to 8 percent slopes	416 418	Rock outcrop-Bluesky complex, 5 to 80 percent slopes Asaayi-Osoridge complex, 2 to 15 percent slopes	County, farm or ranch	1283	ditch		Severely eroded spot	=
245 250	Buckle-Gapmesa-Barboncito complex, 1 to 6 percent slopes Hospah-Skyvillage-Rock outcrop complex, 2 to 35 percent slopes	419 420	Fortwingate-Cinnadale-Rock outcrop complex, 5 to 45 percent slopes Seco clay loam, 1 to 5 percent slopes	RAILROAD	<del></del>	SMALL LAKES, PONDS AND RESERVOIR	S	Slide or slip	3
255 258	Farview-Rock outcrop complex, 2 to 15 percent slopes Eagleye-Atchee-Rock outcrop complex, 2 to 35 percent slopes	425 430	Montillo-Canoneros complex, 2 to 6 percent slopes	POWER TRANSMISSION LINE		Perennial water		Sodic spot	ø
260	Quarries and pits	435	Montillo gravelly loam, 2 to 6 percent slopes Tsoodzil-Amcec association, 5 to 50 percent slopes	(normally not shown)		referillat water	•	Spoil area	Ξ
261 265	Coal mine land Uranium mined lands	440 525	Chivato clay, 0 to 1 percent slopes Silcat clay loam, 1 to 10 percent slopes	PIPE LINE (normally not shown)	<u> </u>	Miscellaneous water	<b>(a)</b>	Stony spot	0
270 275	Alesna-Rock outcrop complex, 15 to 55 percent slopes Eldado gravelly fine sandy loam, 1 to 5 percent slopes	550 555	Bryway-Galzuni loams, 1 to 8 percent slopes Parkelei-Evpark fine sandy loams, 2 to 8 percent slopes			Flood pool line	FLOOD POOL LINE	• •	on .
280	Azabache extremely gravelly clay loam, 2 to 8 percent slopes	560	Flugle-Teczuni complex, 1 to 5 percent slopes	FENCE (normally not shown)	x	MICOSI I ANISOLIO WATER SEATUREO		Very stony spot	v
290 291	Rock outcrop-Westmion-Skyvillage complex, 30 to 80 percent slopes Rock outcrop-Eagleye-Atchee complex, 35 to 70 percent slopes	561 565	Flugle-Plumasano association, 2 to 8 percent slopes Plumasano-Rock outcrop complex, 15 to 40 percent slopes	LEVEES		MISCELLANEOUS WATER FEATURES		Wet spot	¥
300 305	Regracic gravelly sandy clay loam, 2 to 6 percent slopes Celavar-Atarque complex, 1 to 8 percent slopes	566 575	Bamac extremely gravelly sandy loam, 5 to 50 percent slopes Ramah-Pescado association, 1 to 8 percent slopes	Without road		Spring	۰-		
308	Fikel-Venzuni complex, 1 to 6 percent slopes					Well, artesian			
				With road		Well, irrigation	0		
				With railroad	***************************************	well, illigation	-0-		
				Single side slope (showing actual feature location)					
				DAMS					
				Medium or Small	W				
				LANDFORM FEATURES	$\smile$				

Prominent hill or peak

Soil Sample Site

#

S

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 30′00″ MCKINLEY COUNTY AREA, NEW MEXICO EAST OF GREAT BEND QUADRANGLE SHEET NUMBER 1 OF 101

108° 22′30″

735,000mE

736 1 08° 25′00″ 732 108° 27′ 30″ 36°15′00″ 36°15′00″ 36°12′30″ - 4010 36°12′30″ 108° 30′00″ 108° 27′ 30″ Joins sheet 3, East of Grey Hill Spring This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 EAST OF GREAT BEND, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 1 OF 101 2HUNTER WASH Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 3 EAST OF GREY HILL SPRING North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 4 WEST OF LA VIDA MISSION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_<u>|</u>

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 22'30"
736000mE
727 MCKINLEY COUNTY AREA, NEW MEXICO HUNTER WASH QUADRANGLE SHEET NUMBER 2 OF 101

108°15′00″

746°00mE
747 36°15′00″ 36°12′30″ 108° 20′00″ 108°15′00″ Joins sheet 4, West of La Vida Mission This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HUNTER WASH, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 2 OF 101 1 EAST OF GREAT BEND Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 3 EAST OF GREY HILL SPRING 4 WEST OF LA VIDA MISSION North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

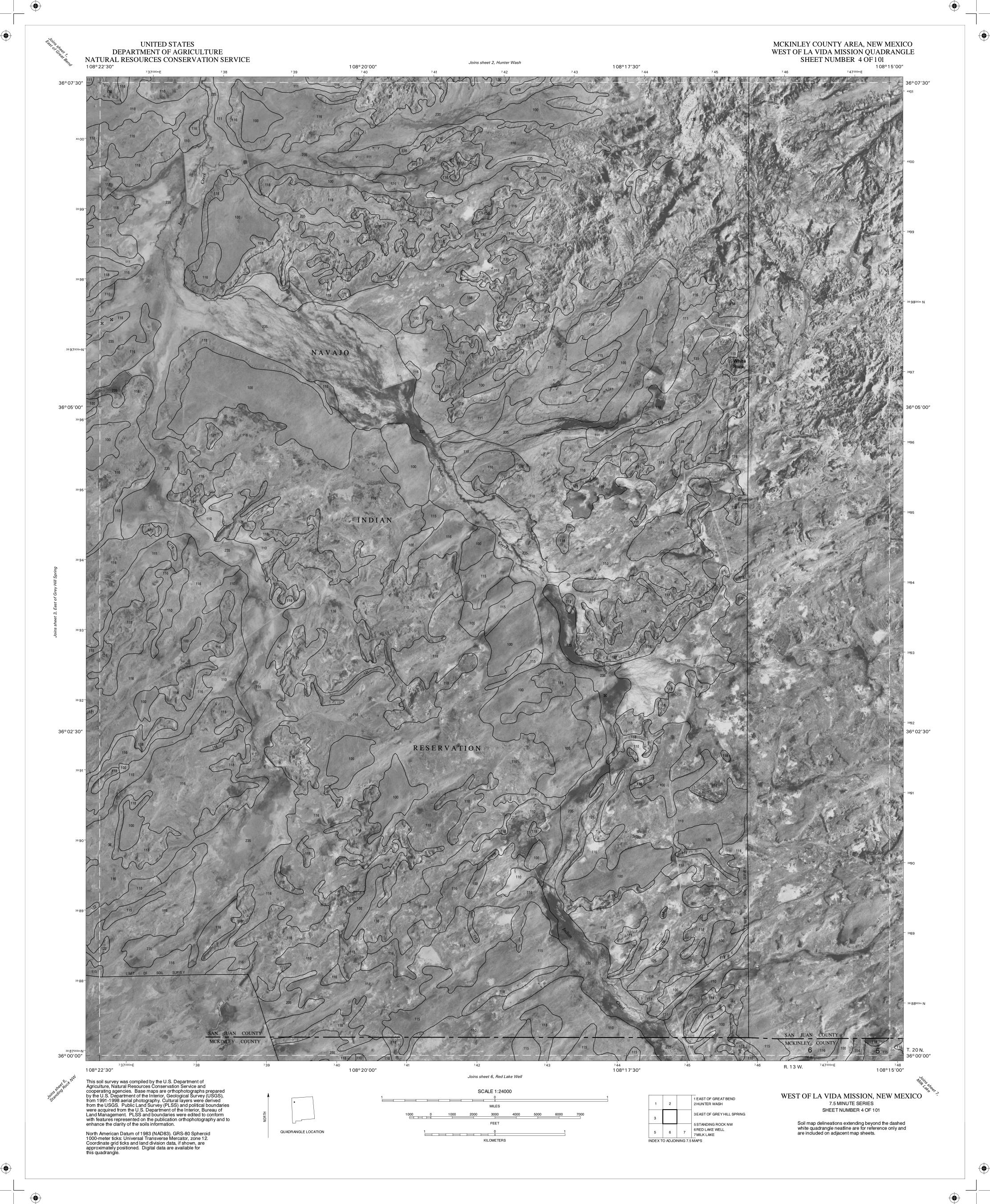
MCKINLEY COUNTY AREA, NEW MEXICO EAST OF GREY HILL SPRING QUADRANGLE SHEET NUMBER 3 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

108° 30′00″

725000mE

726

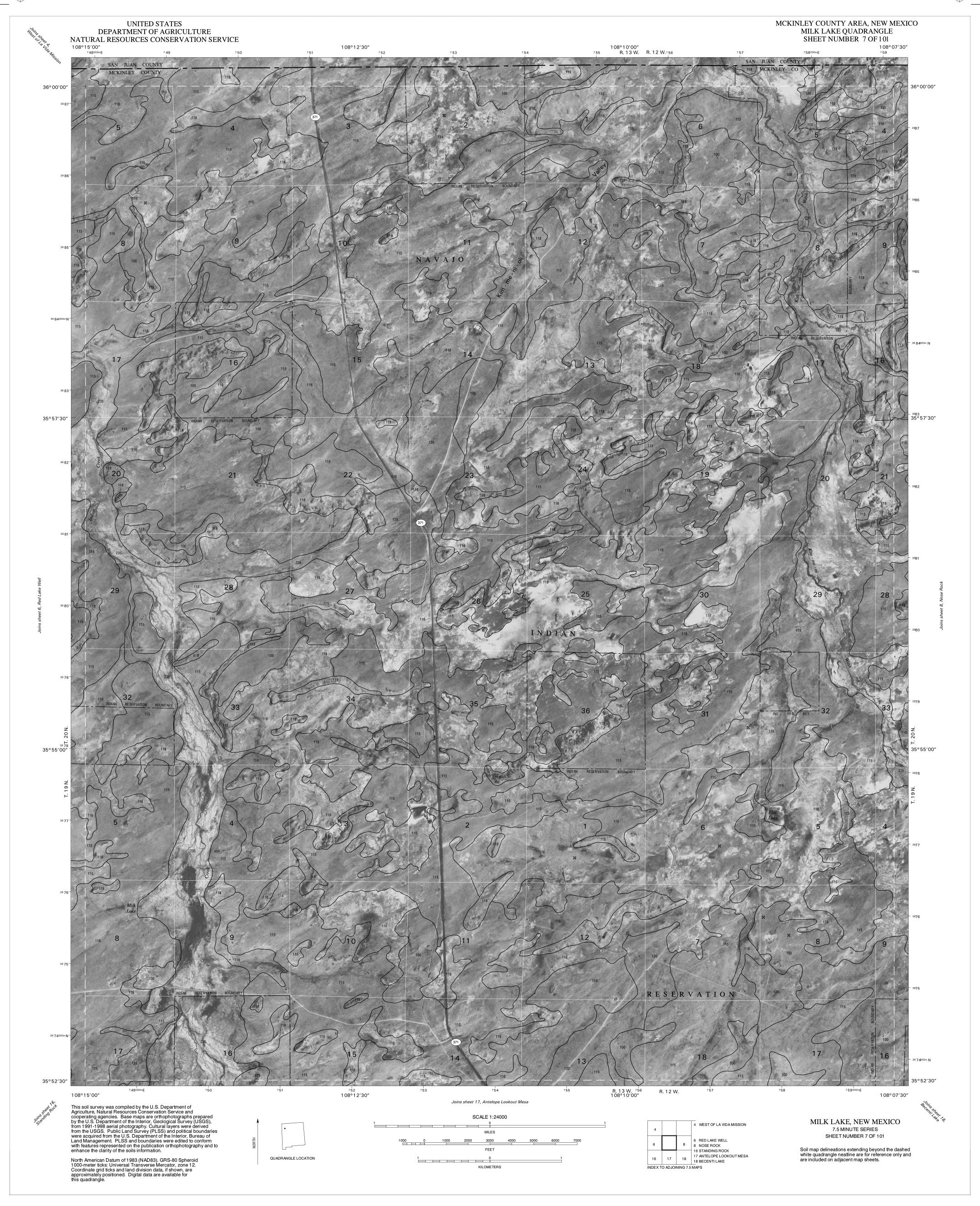
727 Joins sheet 1, East of Great Bend 108° 25′00″ 36° 07′30″ 36° 05′00″ 36° 05′00″ Joins sheet 5, Standing Rock NW This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 EAST OF GREY HILL SPRING, NEW MEXICO 7.5 MINUTE SERIES 2 1 EAST OF GREAT BEND 2HUNTER WASH SHEET NUMBER 3 OF 101 1000 0 1000 4 WEST OF LA VIDA MISSION Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 5 STANDING ROCK NW North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 6 6 RED LAKE WELL KILOMETERS INDEX TO ADJOINING 7.5 MAPS

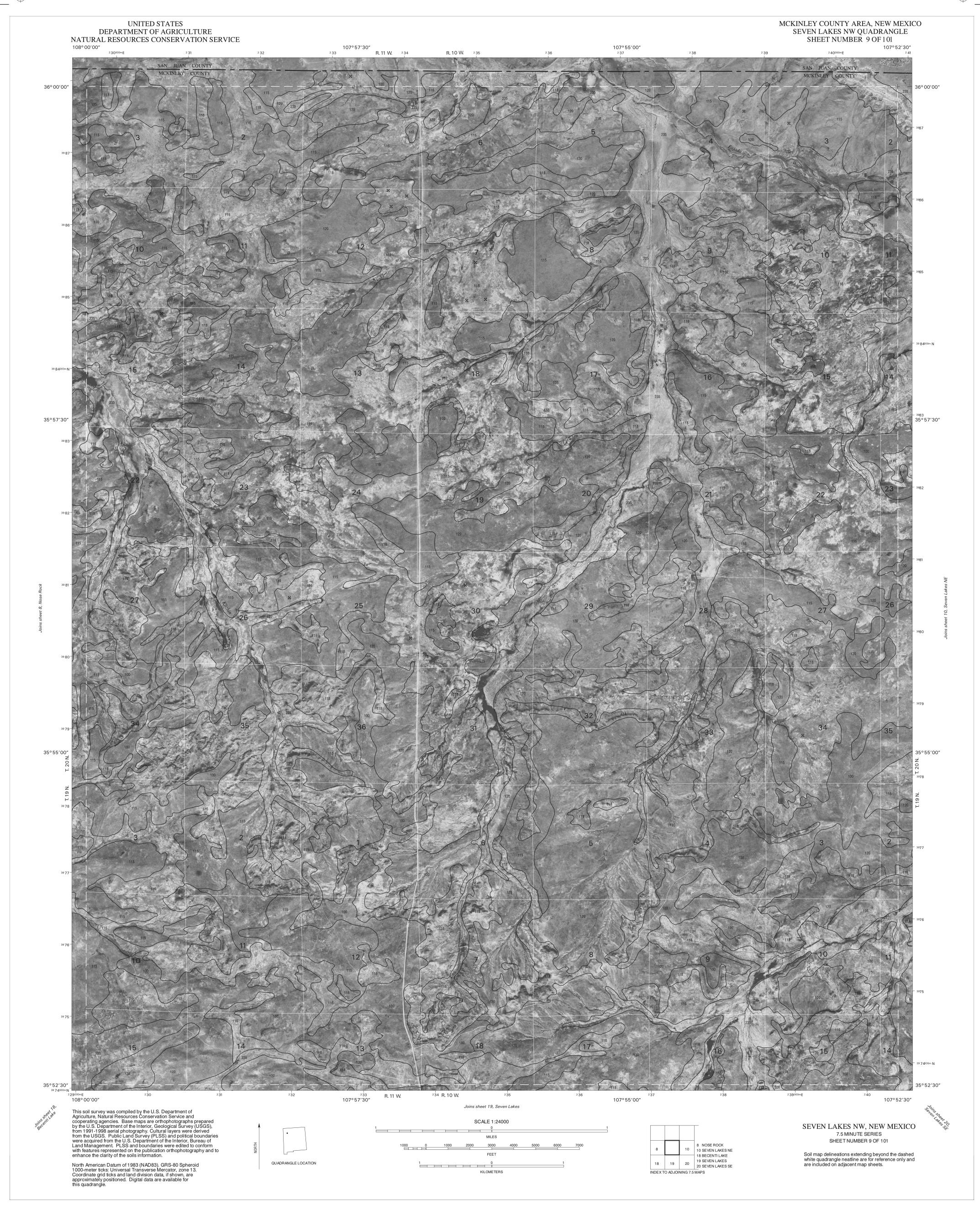


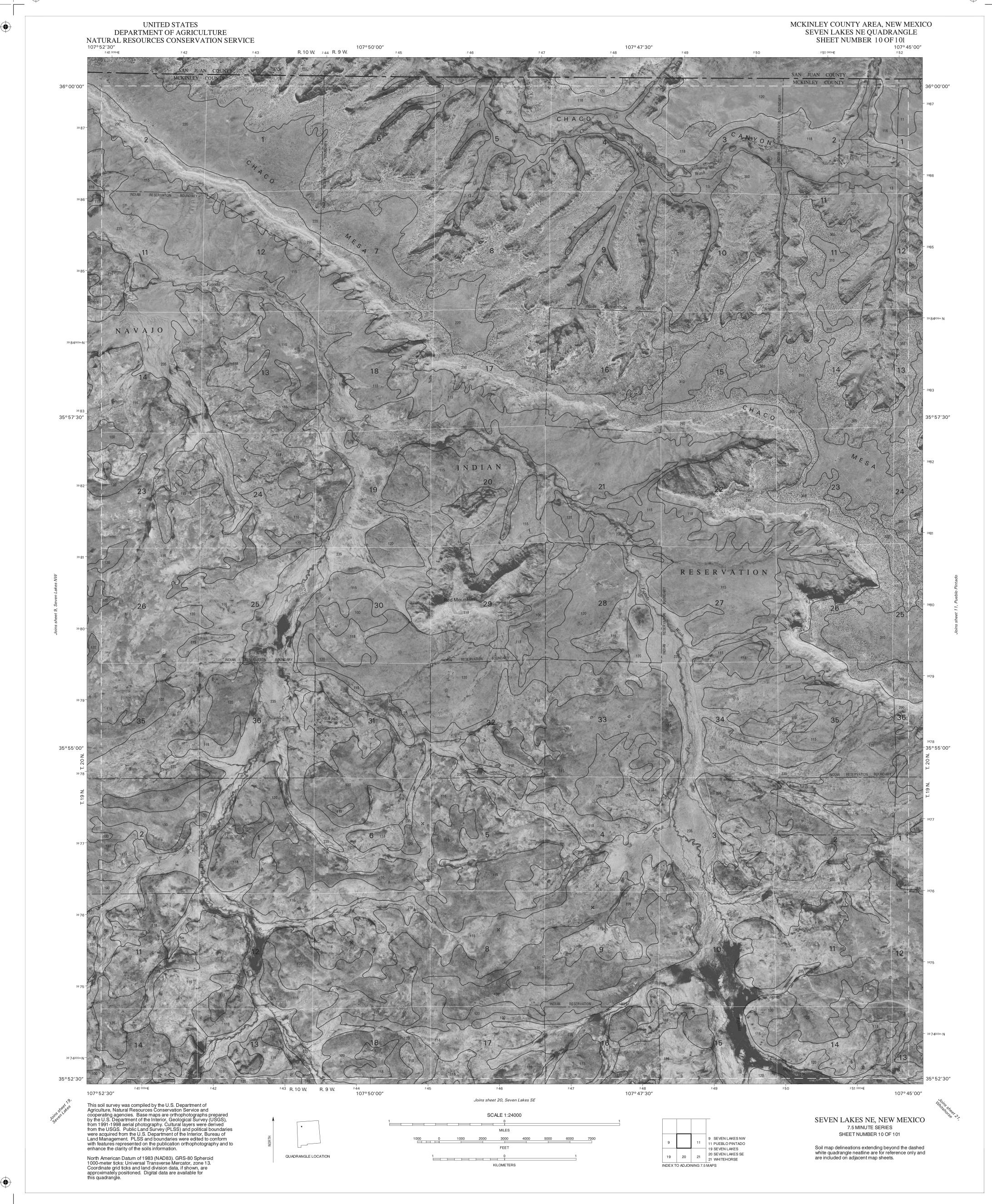
MCKINLEY COUNTY AREA, NEW MEXICO STANDING ROCK NW QUADRANGLE SHEET NUMBER 5 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108° 30'00" Joins sheet 3, East of Grey Hill Spring 108° 27′30″ 108° 25′00″ 108° 22′30″ 36° 00′00″ 36° 00′ 00″ 35° 57′ 30″ -35°57′30″ 35°55′00″ 108° 30′00″ Joins sheet 15, Toyee This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 STANDING ROCK NW, NEW MEXICO 7.5 MINUTE SERIES 3 EAST OF GREYHILL SPRING 4 WEST OF LA VIDA MISSION SHEET NUMBER 5 OF 101 1000 0 1000 6 RED LAKE WELL Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 15 TOYEE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 16 16 STANDING ROCK KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_\_

MCKINLEY COUNTY AREA, NEW MEXICO RED LAKE WELL QUADRANGLE SHEET NUMBER 6 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 4, West of La Vida Mission 108°15′00″ 108°17′30″ 108° 22′30″ 108° 20′00″ R. 14 W. 746 R. 13 W. 36° 00′00″ 36° 00′ 00″ 35°57′30″ 35°57′30″ 108° 22′30″ 108°17′30″ Joins sheet 16, Standing Rock This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 RED LAKE WELL, NEW MEXICO 3 EAST OF GREY HILL SPRING 7.5 MINUTE SERIES 4 WEST OF LA VIDA MISSION SHEET NUMBER 6 OF 101 5 STANDING ROCK NW 7 MILK LAKE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 15 TOYEE 16 STANDING ROCK North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 17 17 ANTELOPE LOOKOUT MESA KILOMETERS INDEX TO ADJOINING 7.5 MAPS







MCKINLEY COUNTY AREA, NEW MEXICO PUEBLO PINTADO QUADRANGLE SHEET NUMBER 11 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 107° 45′00″ 252000mE 107° 42′30″ ²56 107° 37′30″ <sup>2</sup>63 R. 8 W. R. 7 W. 107° 40′00″ <sup>2</sup>53 R. 9 W. R. 8 W. <sup>2</sup>54 SAN JUAN COUNTY 36° 00′ 00″ 36° 00′ 00″ 12 NAVAJO 35°57′30″ 35°57′30″ INDIAN 39 73000m N <sup>2</sup>62<sup>000mE</sup> R. 8 W. R. 7 W. <sup>2</sup>63 107° 37'30" R. 9 W. 253 107° 40′00″ 255 260 <sup>2</sup>52<sup>000m</sup>E R. 8 W. 254 107° 45′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. Joins sheet 21, Whitehorse SCALE 1:24000 PUEBLO PINTADO, NEW MEXICO 7.5 MINUTE SERIES MILES SHEET NUMBER 11 OF 101 10 SEVEN LAKES NE 12 | 12 PUEBLO ALTO TRADING POST Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 20 SEVEN LAKES SE 21 WHITEHORSE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. 22 WHITEHORSE RINCON QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO UNITED STATES PUEBLO ALTO TRADING POST QUADRANGLE SHEET NUMBER 12 OF 101 DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 107° 35′00″ ² 67 107° 32′30″ ² 71 R. 7 W. R. 6 W. 273 36° 00′ 00″ 36° 00′ 00″ MCKINLEY / COUNTY 35°57′30″ -35°57′30″ NAVAJO <sup>2</sup>63<sup>000m</sup>E 107°37′30″ R. 6 W. <sup>273000m</sup>E 264 266 2 71 274 R. 7 W. <sup>272</sup> 107° 35′00″ 107° 30′00″ Joins sheet 22, Whitehorse Rincon This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 PUEBLO ALTO TRADING POST, NEW MEXICO 7.5 MINUTE SERIES MILES SHEET NUMBER 12 OF 101 11 PUEBLO PINTADO 13 STAR LAKE
21 WHITEHORSE
22 WHITEHORSE RINCON Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. 23 23 RINCON MARQUEZ QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO STAR LAKE QUADRANGLE SHEET NUMBER 13 OF 101 107° 22′30″ UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 107° 30'00" 107° 25′00″ R. 6 W. <sup>2</sup>82 107° 27′ 30″ 36° 00′ 00″ 36° 00′ 00″ SANDOVAL COUNTY
MCKINLEY COUNTY 35°57′30″ Joins sheet 23, Rincon Marquez This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 STAR LAKE, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 13 OF 101 12 PUEBLO ALTO TRADING POST 14 OJO ENCINO MESA Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 22 WHITEHORSE RINCON 23 RINCON MARQUEZ 23 24 24 TINIAN North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO
OJO ENCINO MESA QUADRANGLE
SHEET NUMBER 14 OF 101
107°15′00″
296°00™E
297 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

107° 22'30"

286000mE

287

288 107°17′30″ 107° 20′00″ R. 5 W. 289 36°00′00″ 36° 00′ 00″ 35°57′30″ 35°57′30″ RESERVATION 107°17′30″ Joins sheet 24, Tinian This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 OJO ENCINO MESA, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 14 OF 101 13 STAR LAKE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 23 RINCON MARQUEZ 24 TINIAN North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_

MCKINLEY COUNTY AREA, NEW MEXICO TOYEE QUADRANGLE SHEET NUMBER 15 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 5, Standing Rock NW 1 08° 25′00″ 108° 22′30″ R. 15 W. <sup>737</sup> R. 14 W. 108° 27′ 30″ 35°52′30″ 35° 52′30″ - <sup>3973</sup> 39 72 35°50′00″ 35°50′00″ R. 14 W. 108° 22′30″ 108° 30′00″ 108° 27′ 30″ 108° 25′00″ Joins sheet 30, Oak Spring This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 TOYEE, NEW MEXICO 7.5 MINUTE SERIES 6 5 STANDING ROCK NW 6 RED LAKE WELL SHEET NUMBER 15 OF 101 16 STANDING ROCK Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 29 HARD GROUND FLATS 30 OAK SPRING 30 31 30 UAN SERING North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS



MCKINLEY COUNTY AREA, NEW MEXICO
ANTELOPE LOOKOUT MESA QUADRANGLE
SHEET NUMBER 17 OF 101
108° 07'30" UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108°15'00" Joins sheet 7, Milk Lake 108°10′00″ R. 13 W. <sub>756</sub> 108°12′30″ R. 12 W. 35°52′30″ 35°52′30″ 35°50′00″ 35°50′00″ 108°10′00″ Joins sheet 32, Crownpoint This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 ANTELOPE LOOKOUT MESA, NEW MEXICO 6 RED LAKE WELL 8 7 MILK LAKE
8 NOSE ROCK
16 STANDING ROCK
18 18 BECENTI LAKE 7.5 MINUTE SERIES SHEET NUMBER 17 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 31 DALTON PASS 32 CROWNPOINT North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. 32 33 33 HEART ROCK QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 07′30″ MCKINLEY COUNTY AREA, NEW MEXICO BECENTI LAKE QUADRANGLE SHEET NUMBER 18 OF 101 Joins sheet 8, Nose Rock 108° 00′00″ 1 08° 02′30″ 108° 05′00″ <sup>7</sup>65 R. 12 W. <sup>7</sup>66 R. 11 W. 35°52′30″ NAVAJO 35°50′00″ 35°50′00″ 108° 07′30″ Joins sheet 33, Heart Rock This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 BECENTI LAKE, NEW MEXICO 7 MILK LAKE 8 NOSE ROCK 7.5 MINUTE SERIES 9 SEVEN LAKES NW 17 ANTELOPE LOOKOUT MESA 19 19 SEVEN LAKES SHEET NUMBER 18 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 32 CROWNPOINT 34 BEART ROCK 34 LAGUNA CASTILLO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 33 KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_

\_\_\_\_\_\_

MCKINLEY COUNTY AREA, NEW MEXICO SEVEN LAKES QUADRANGLE SHEET NUMBER 19 OF 101 **UNITED STATES** DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 9, Seven Lakes NW 108° 00′00″ 229000mE 107° 57′30″ ² 33 107° 55′00″ 107°52′30″ <sup>2</sup> 34 R. 10 W. 35°52′30″ \_ 35°52′30″ 35°50′00″ 35°50′00″ 107° 55′00″ Joins sheet 34, Laguna Castillo This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 SEVEN LAKES, NEW MEXICO 8 NOSE ROCK 10 9 SEVEN LAKES NW
10 SEVEN LAKES NE
18 BECENTI LAKE
20 20 SEVEN LAKES SE 7.5 MINUTE SERIES SHEET NUMBER 19 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 33 HEART ROCK 34 S S ORPHAN ANNIE ROCK North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO SEVEN LAKES SE QUADRANGLE SHEET NUMBER 20 OF 101 **UNITED STATES** DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 10, Seven Lakes NE 107° 47′30″ ² 48 107° 52′ 30″ 107° 50′ 00″ 107° 45′00″ <sup>2</sup> 43 R. 10 W. R. 9 W. 35°52′30″ 35°52′30″ NAVAJO 35°50′00″ 35°50′00″ 107° 47′30″ Joins sheet 35, Orphan Annie Rock This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 SEVEN LAKES SE, NEW MEXICO 9 SEVEN LAKES NW 10 SEVEN LAKES NE 11 PUEBLO PINTADO 19 SEVEN LAKES 7.5 MINUTE SERIES SHEET NUMBER 20 OF 101 21 21 WHITEHORSE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 34 LAGUNA CASTILLO 35 ORPHAN ANNIE ROCK North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. 36 HOSPAH QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES DEPARTMENT OF AGRICULTURE MCKINLEY COUNTY AREA, NEW MEXICO WHITEHORSE QUADRANGLE NATURAL RESOURCES CONSERVATION SERVICE SHEET NUMBER 21 OF 101 Joins sheet 11, Pueblo Pintado 107° 40′00″ ² 59 107° 37′30″ R. 8 W. R. 7 W. <sup>2</sup>63 107° 45′00″ 107° 42′30″ R. 9 W. <sup>2</sup>53 R. 8 W. 35° 52′30″ - 3973 35°52′30″ INDIAN 35°50′00″ 35°50′00″ 107° 42′30″ 107° 40′00″ Joins sheet 36, Hospah This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 WHITEHORSE, NEW MEXICO 10 SEVEN LAKES NE
11 PUEBLO PINTADO
12 PUEBLO ALTO TRADING POST
20 SEVEN LAKES SE
22 WHITEHORSE RINCON 7.5 MINUTE SERIES SHEET NUMBER 21 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 35 ORPHAN ANNIE ROCK 36 37 36 HOSPAH 37 MESITA AMERICANA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES MCKINLEY COUNTY AREA, NEW MEXICO WHITEHORSE RINCON QUADRANGLE SHEET NUMBER 22 OF 101 DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 12, Pueblo Alto Trading Post 107° 37′30″ 263000mE 107° 35′00″ 107° 32′30″ 107° 30′00″ R. 7 W. 272 R. 6 W. 273000mE 35°52′30″ 35°52′30″ INDIAN 35°50′00″ 35°50′00″ 107° 37′ 30″ 107° 32′30″ 107° 30′00″ Joins sheet 37, Mesita Americana This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 WHITEHORSE RINCON, NEW MEXICO 11 PUEBLO PINTADO
13 12 PUEBLO ALTO TRADING POST 7.5 MINUTE SERIES 13 STAR LAKE
21 WHITEHORSE
23 23 RINCON MARQUEZ SHEET NUMBER 22 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 36 HOSPAH 37 MESITA AMERICANA 38 MESITA DEL GAVILAN North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO RINCON MARQUEZ QUADRANGLE SHEET NUMBER 23 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 13, Star Lake 107° 27′30″ ²78 107° 25′00″ R. 6 W. <sup>2</sup>82 R. 5 W. 107° 30′00″ 107° 22′30″ 35°52′30″ 35°52′30″ NAVAJO 35°50′00″ 35°50′00″ INDIAN Joins sheet 38, Mesita Del Gavilan This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 RINCON MARQUEZ, NEW MEXICO 12 PUEBLO ALTO TRADING POST
13 STAR LAKE
14 OJO ENCINO MESA
22 WHITEHORSE RINCON 7.5 MINUTE SERIES SHEET NUMBER 23 OF 101 24 24 TINIAN Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 37 MESITA AMERICANA 38 MESITA DEL GAVILAN
39 CANADA CALLADITA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS



UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
109° 07′30″ MCKINLEY COUNTY AREA, NEW MEXICO WINDOW ROCK QUADRANGLE SHEET NUMBER 25 OF 1 01

109° 00′00″ 109°02′30″ 677 109°05′00″ 35° 45′00″ 35° 45′00″ 35° 42′30″ 35° 42′30″ 109°05′00″ 109°02′30″ 109°00′00″ Joins sheet 40, Hunters Point This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 WINDOW ROCK, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 25 OF 101 26 TSE BONITA SCHOOL Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 40 41 40 HUNTERGES S.... 41 SAMSON LAKE 40 HUNTERS POINT North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

-<u>|</u>

- -

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
109° 00'00"
681 000mF MCKINLEY COUNTY AREA, NEW MEXICO TSE BONITA SCHOOL QUADRANGLE SHEET NUMBER 26 OF 1 01 108°57′30″ 35° 45′00″ 35° 45′00″ 35° 42′30″ 109° 00′00″ 108° 55′00″ Joins sheet 41, Samson Lake This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 TSE BONITA SCHOOL, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 26 OF 101 25 WINDOW ROCK 27 TWIN LAKES 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 40 HUNTERS POINT 41 42 41 SAMSON LAKE 42 GALLUP WEST North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 45′00″ MCKINLEY COUNTY AREA, NEW MEXICO BIG ROCK HILL QUADRANGLE SHEET NUMBER 28 OF 101 108° 37'30" 1 08° 40′ 00″ 108° 42′30″ 35° 45′00″ 35° 45′00″ 35° 42′30″ -355442′30″ 108° 40′00″ Joins sheet 43, Gallup East This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 BIG ROCK HILL, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 28 OF 101 27 TWIN LAKES 29 29 HARD GROUND FLATS 1000 0 1000 2000 3000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 42 GALLUP WEST 43 GALLUP EAST 44 CHURCH ROCK North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

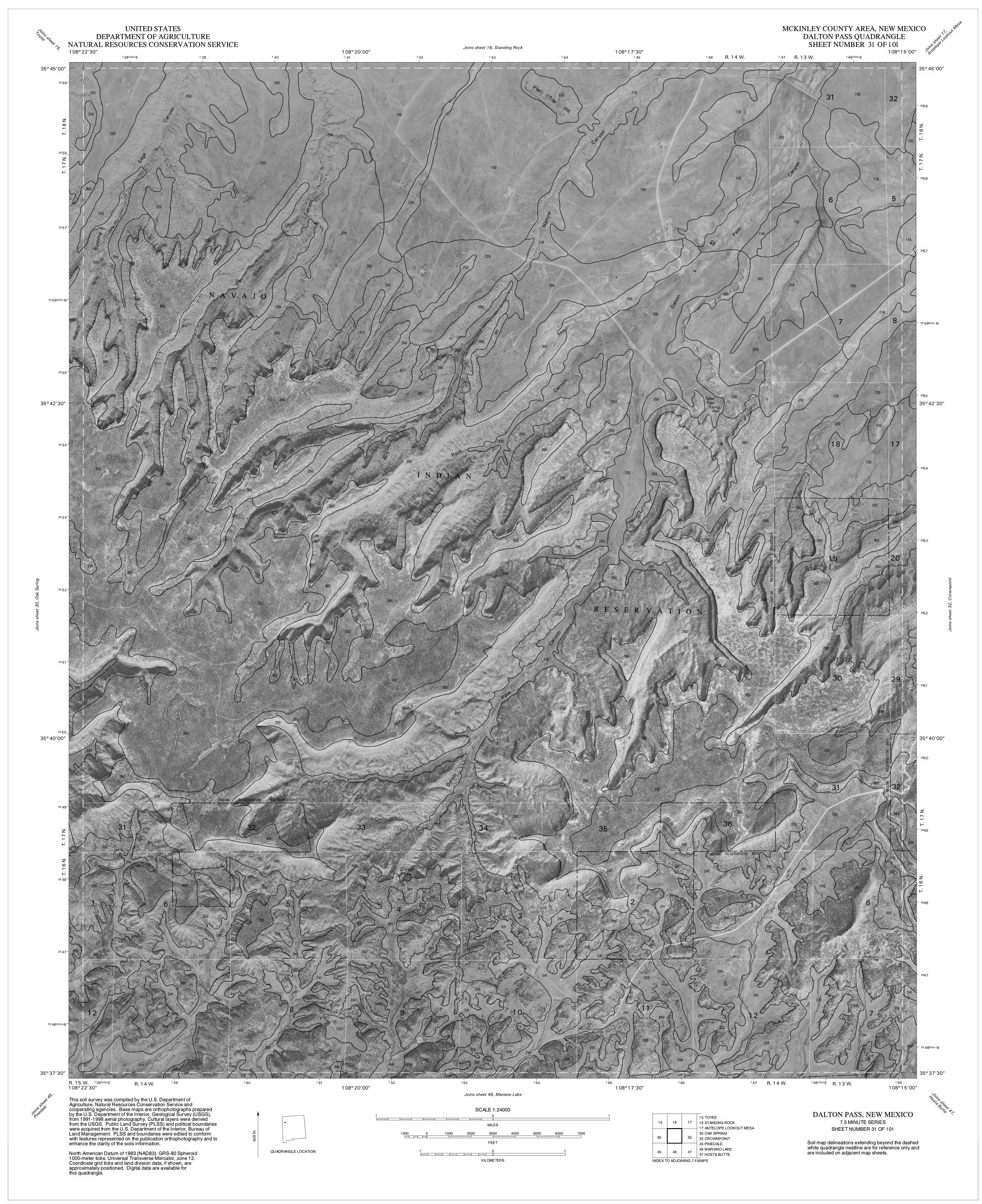
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 37′30″ MCKINLEY COUNTY AREA, NEW MEXICO HARD GROUND FLATS QUADRANGLE SHEET NUMBER 29 OF 101 108°35′00″ 108° 32′ 30″ 35° 45′00″ 35° 45′00″ <sup>39 54</sup> 35° 42′30″ -35° 42′30″ 108° 32′30″ Joins sheet 44, Church Rock This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HARD GROUND FLATS, NEW MEXICO 7.5 MINUTE SERIES 15 TOYEE 28 BIG ROCK HILL 30 OAK SPRING SHEET NUMBER 29 OF 101 1000 0 1000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 43 GALLUP EAST 44 HURCH ROCK 45 PINEDALE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

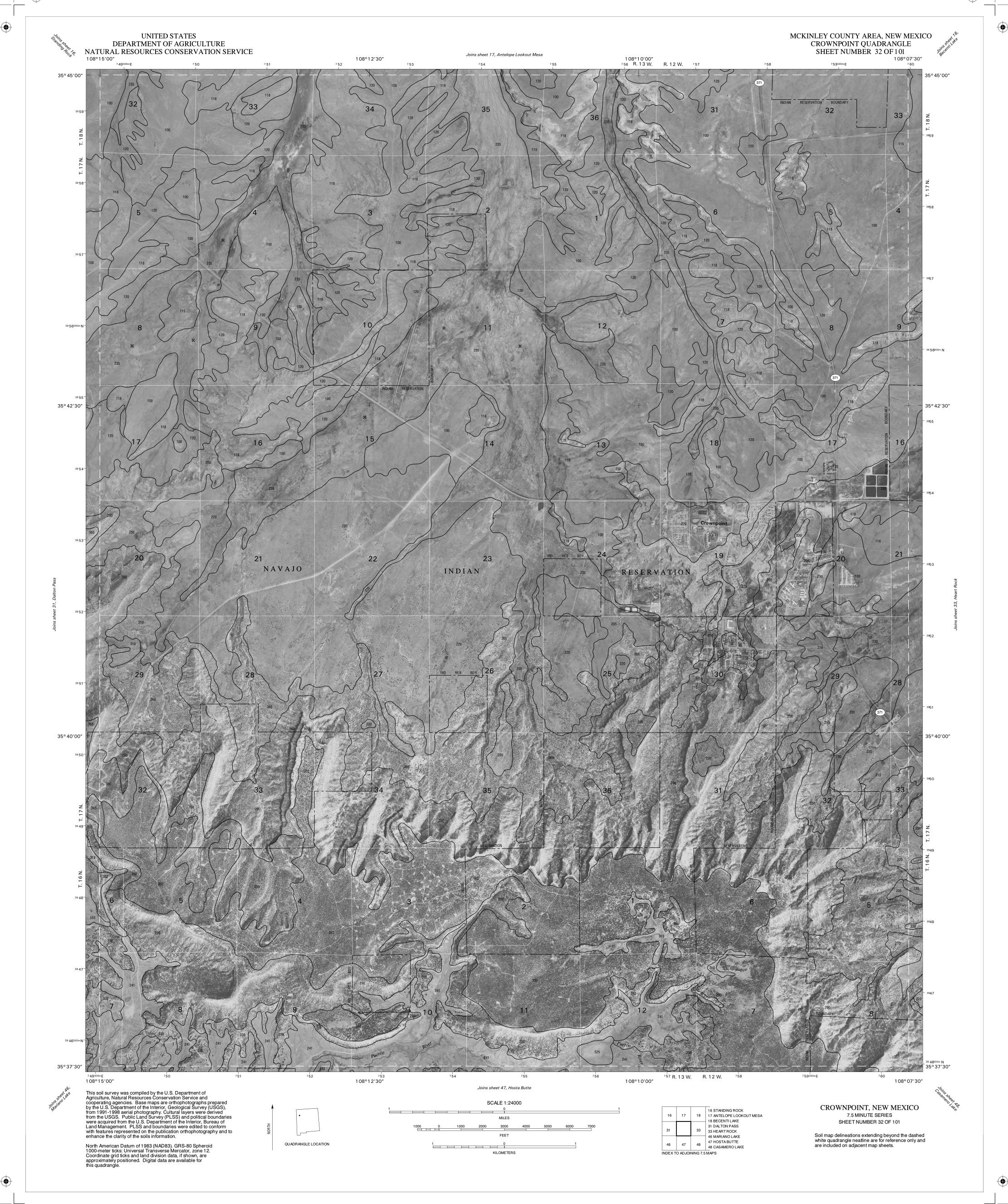
• ·

MCKINLEY COUNTY AREA, NEW MEXICO
OAK SPRING QUADRANGLE
SHEET NUMBER 30 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

108° 30'00"

726000mE 727 728 Joins sheet 15, Toyee 108° 22′30″ R. 15 W. <sup>7</sup>37 R. 14 W. 108° 27′ 30″ 108° 25′00″ 35° 45′00″ 35° 42′30″ 35° 42′30″ 108° 25′00″ Joins sheet 45, Pinedale This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 OAK SPRING, NEW MEXICO 16 15 TOYEE 16 STANDING ROCK 29 HARD GROUND FLATS 31 DALTON PASS 7.5 MINUTE SERIES SHEET NUMBER 30 OF 101 1000 0 1000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 44 CHURCH ROCK 45 PINEDALE 46 MARIANO LAKE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS





•

MCKINLEY COUNTY AREA, NEW MEXICO HEART ROCK QUADRANGLE SHEET NUMBER 33 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

108° 07′30″

7600000E

761

762 Joins sheet 18, Becenti Lake 1 08° 00′00″ 108° 05′00″ 108° 02′30″ R. 12 W. 766 R. 11 W. 35° 45′00″ 35° 45′00″ 34 35° 42′30″ 35° 42′30″ INDIAN 108° 07′30″ Joins sheet 48, Casamero Lake This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HEART ROCK, NEW MEXICO 17 ANTELOPE LOOKOUT MESA 7.5 MINUTE SERIES 18 BECENTI LAKE 19 SEVEN LAKES SHEET NUMBER 33 OF 101 32 CROWNPOINT 34 LAGUNA CASTILLO Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 47 HOSTA BUTTE 49 48 CASAMERO LAKE 49 BORREGO PASS North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO LAGUNA CASTILLO QUADRANGLE SHEET NUMBER 34 OF 101 **UNITED STATES** DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 19, Seven Lakes 107° 52′30″ 107° 55′00″ 107° 57′ 30″ <sup>2</sup> 33 R. 11 W. R. 10 W. 35° 45′00″ 35° 45′00″ NAVAJO 235 35° 42′30″ 35° 42′30″ 35° 40′00″ 107° 55′00″ Joins sheet 49, Borrego Pass This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 LAGUNA CASTILLO, NEW MEXICO 18 BECENTI LAKE . 0 7.5 MINUTE SERIES 20 19 SEVEN LAKES 20 SEVEN LAKES SE 33 HEART ROCK 35 ORPHAN ANNIE ROCK SHEET NUMBER 34 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 48 CASAMERO LAKE 49 50 49 BORREGO PASS 50 MESA DE LOS TOROS North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

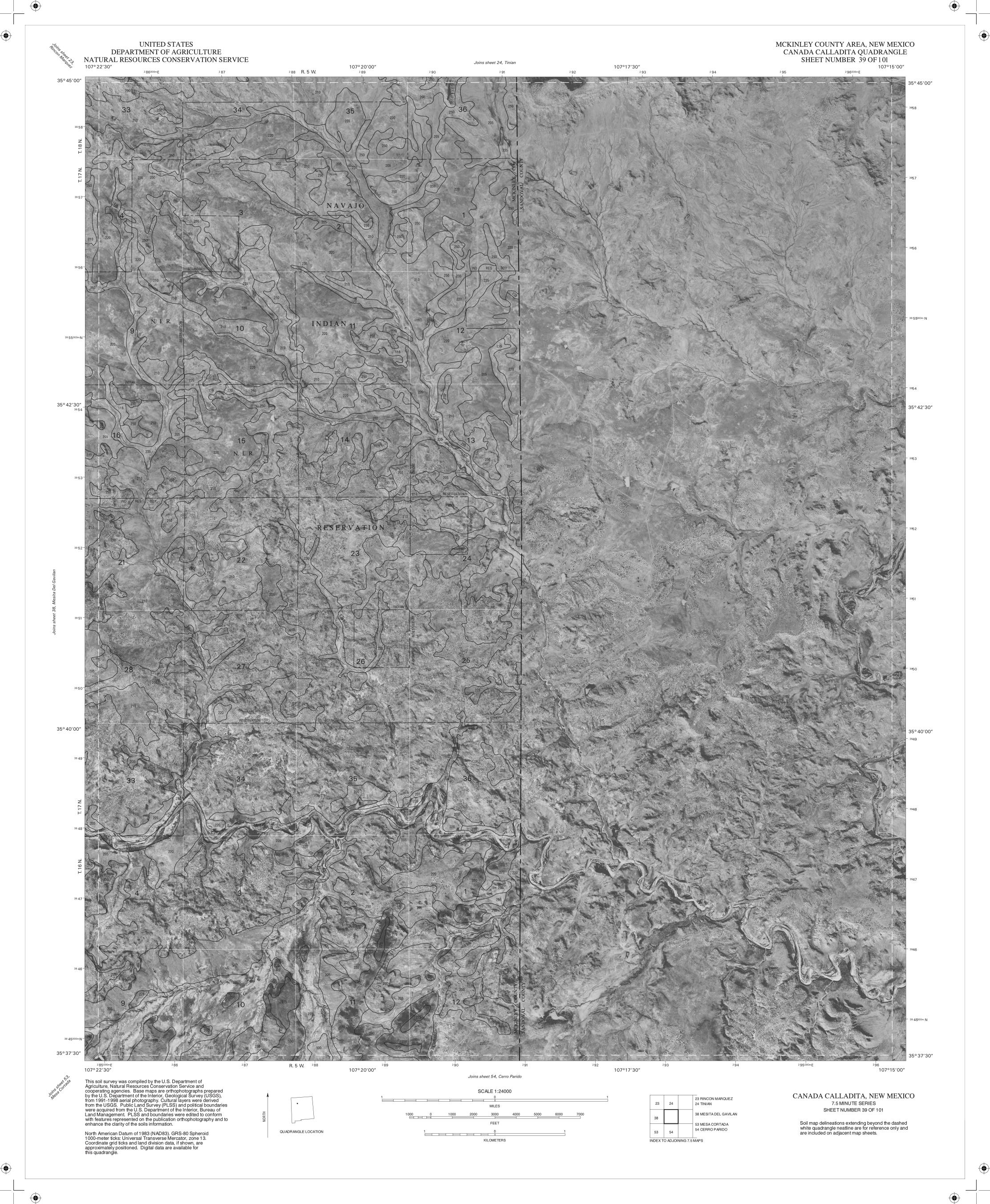
107°52′30″
240000mE 241 MCKINLEY COUNTY AREA, NEW MEXICO ORPHAN ANNIE ROCK QUADRANGLE SHEET NUMBER 35 OF 101 Joins sheet 20, Seven Lakes SE 107° 50′ 00″ 107° 47′30″ 107° 45′00″ R. 10 W. 243 R. 9 W. 35° 45′00″ 35° 45′00″ 35° 42′30″ 35° 42′30″ 107° 47′30″ Joins sheet 50, Mesa De Los Toros This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 ORPHAN ANNIE ROCK, NEW MEXICO 19 SEVEN LAKES 20 21 20 SEVEN LAKES SE 7.5 MINUTE SERIES 21 WHITEHORSE 34 LAGUNA CASTILLO SHEET NUMBER 35 OF 101 36 HOSPAH Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 49 BORREGO PASS 50 51 50 MESA DE LOS TOROS 51 PIEDRA DE LA AGUILA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO HOSPAH QUADRANGLE SHEET NUMBER 36 OF 101 **UNITED STATES** DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 21, Whitehorse 107° 42′30″ ²55 107° 40′00″ ²59 107° 37′30″ 262000mE R. 8 W. R. 7 W. 107° 45′00″ R. 9 W. R. 8 W. <sup>2</sup>53 35° 45′00″ 35° 45′00″ 35° 42′30″ 35° 42′ 30″ 107° 45′00″ 107° 42′30″ 107° 40′00″ 107° 37′ 30″ Joins sheet 51, Piedra De La Aguila This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HOSPAH, NEW MEXICO 20 SEVEN LAKES SE
21 WHITEHORSE
22 WHITEHORSE RINCON
35 ORPHAN ANNIE ROCK
37 MESITA AMERICANA 7.5 MINUTE SERIES SHEET NUMBER 36 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 50 MESA DE LOS TOROS 51 PIEDRA DE LA AGUILA 52 EL DADO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO MESITA AMERICANA QUADRANGLE SHEET NUMBER 37 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE
107° 37'30" Joins sheet 22, Whitehorse Rincon 107° 32′30″ ²70 107° 35′00″ 107° 30′00″ R. 7 W. 272 R. 6 W. 35° 45′00″ 35° 45′00″ RESERVATION 35° 42′30″ 35° 42′30″ 107° 37′30″ 107° 30′00″ Joins sheet 52, El Dado This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 MESITA AMERICANA, NEW MEXICO 21 WHITEHORSE
22 23 22 WHITEHORSE RINCON
23 RINCON MARQUEZ
36 HOSPAH 1 0 7.5 MINUTE SERIES SHEET NUMBER 37 OF 101 38 MESITA DEL GAVILAN Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 51 PIEDRA DE LA AGUILA 52 EL DADO 53 MESA CORTADA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE MCKINLEY COUNTY AREA, NEW MEXICO MESITA DEL GAVILAN QUADRANGLE SHEET NUMBER 38 OF 101 NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 23, Rincon Marquez 107° 30′00″ 274000mE 107° 25′ 00″ R. 6 W. R. 5 W. <sup>2</sup>82 107° 22′30″ 107° 27′ 30″ 284000mE 35° 45′00″ 35° 45′00″ 35° 42′30″ 3954 35° 42′30″ 107° 30′00″ 107° 25′00″ Joins sheet 53, Mesa Cortada This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 MESITA DEL GAVILAN, NEW MEXICO 22 WHITEHORSE RINCON 23 24 23 RINCON MARQUEZ 7.5 MINUTE SERIES 24 TINIAN SHEET NUMBER 38 OF 101 37 MESITA AMERICANA 39 39 CANADA CALLADITA Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 52 EL DADO 53 MESA CORTADA 54 CERRO PARIDO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_



MCKINLEY COUNTY AREA, NEW MEXICO HUNTERS POINT QUADRANGLE SHEET NUMBER 40 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

109° 07′30″

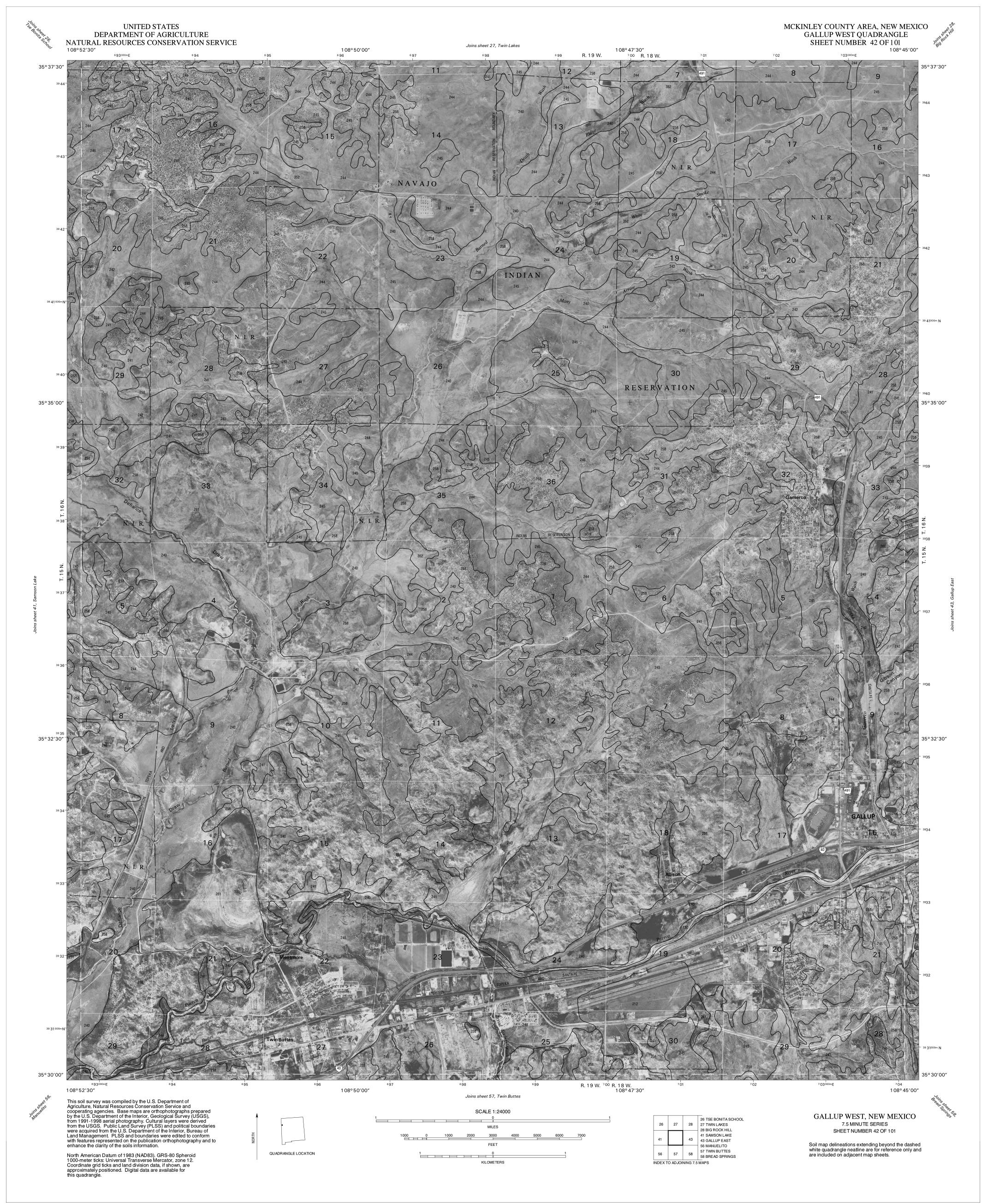
670000mE

671

671 1 09° 00′00″ R. 21 W. R. 20 W. °81 Joins sheet 25, Window Rock 109°05′00″ 109°02′30″ 35° 37′30″ 35° 37′30″ 35°35′00″ 35° 35′00″ 109° 05′00″ 109°02′30″ 109°00′00″ Joins sheet 55, Surrender Canyon This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HUNTERS POINT, NEW MEXICO 25 26 25 WINDOW ROCK 26 TSE BONITA SCHOOL 7.5 MINUTE SERIES SHEET NUMBER 40 OF 101 41 SAMSON LAKE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 55 SURRENDER CANYON 55 56 56 MANUELITO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
109°00'00"
681000mE 682 MCKINLEY COUNTY AREA, NEW MEXICO SAMSON LAKE QUADRANGLE SHEET NUMBER 41 OF 101 Joins sheet 26, Tse Bonita School 108° 57′30″ 685 108° 55′00″ 108°52′30″ R. 20 W. 690 R. 19 W. 691 000mE INDIAN RESERVATION 35° 35′00″ 35° 35′00″ 108° 55′00″ Joins sheet 56, Manuelito This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 SAMSON LAKE, NEW MEXICO 25 WINDOW ROCK 26 27 26 TSE BONITA SCHOOL 7.5 MINUTE SERIES 27 TWIN LAKES SHEET NUMBER 41 OF 101 40 HUNTERS POINT 1000 0 1000 2000 3000 4000 5000 6000 7000 42 GALLUP WEST Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 55 SURRENDER CANYON 56 57 56 MANUELITO 57 TWIN BUTTES North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

-(

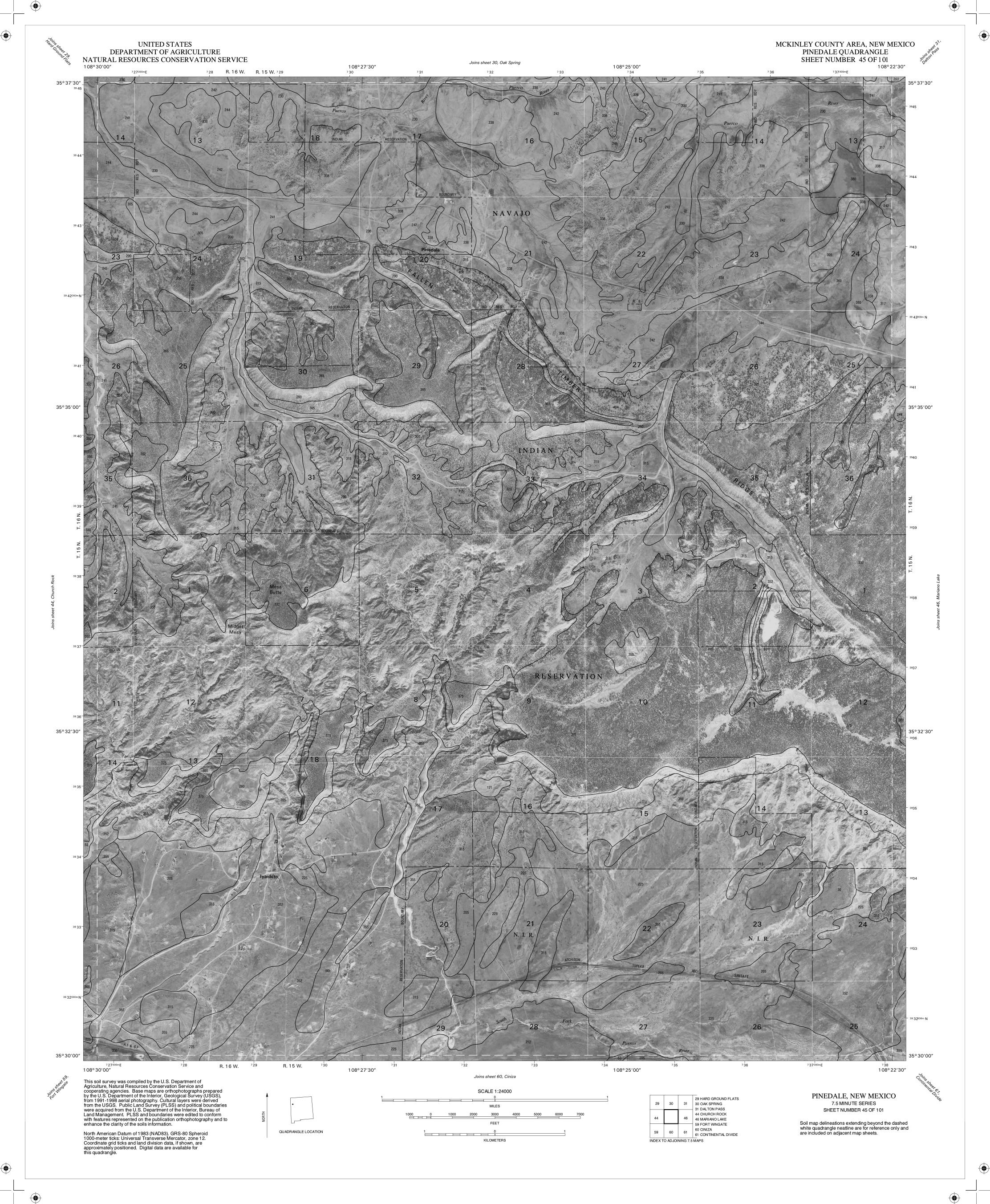


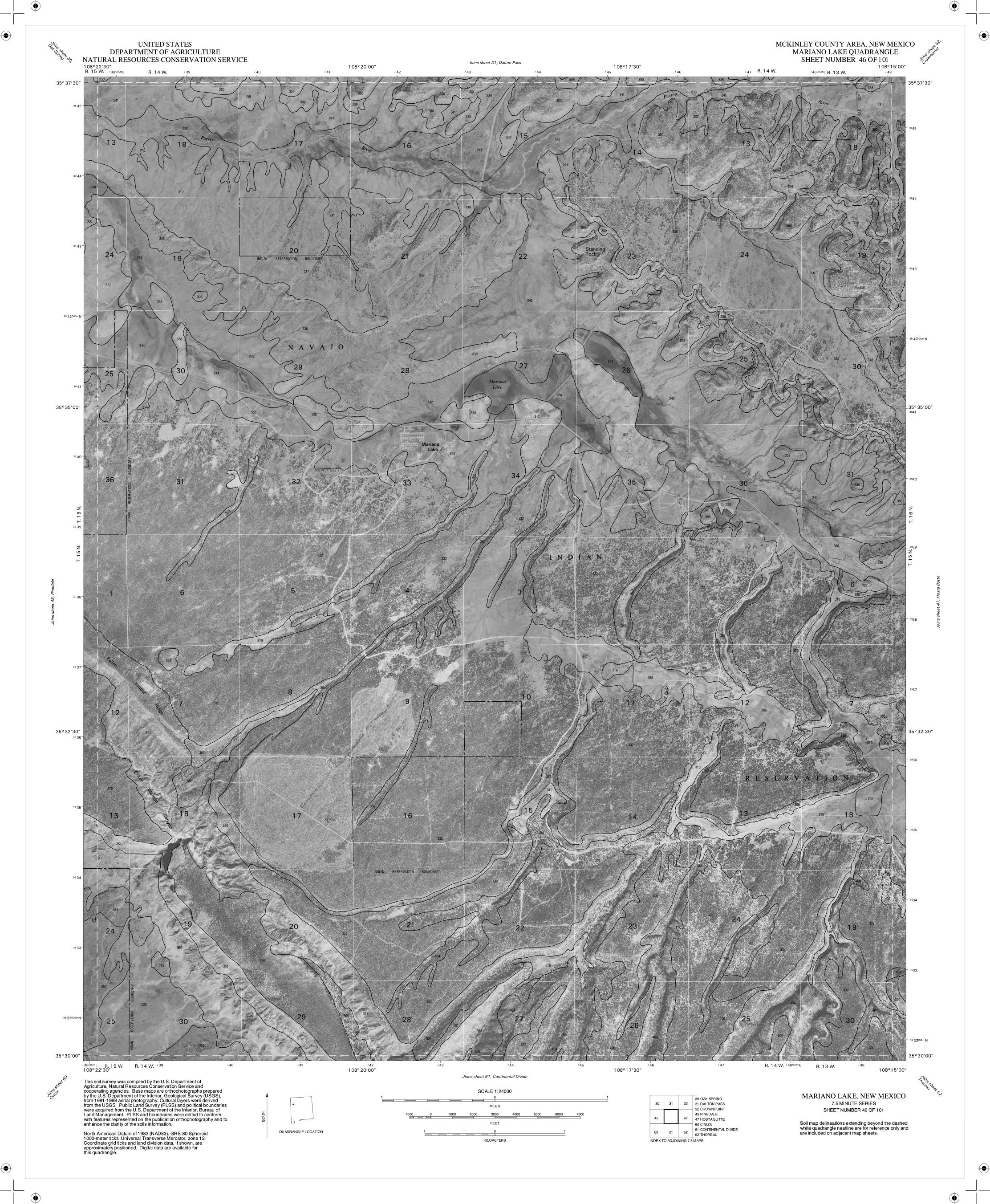
MCKINLEY COUNTY AREA, NEW MEXICO GALLUP EAST QUADRANGLE SHEET NUMBER 43 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE
108° 45′00″ Joins sheet 28, Big Rock Hill 108° 42′30″ 108° 40′00″ 108° 37′ 30″ <sup>7</sup>09 R. 18 W. R. 17 W. 35° 37′ 30″ 35° 37′30″ NAVAJO 35° 35′00″ 35°35′00″ INDIAN 108° 45′00″ 108° 40′00″ Joins sheet 58, Bread Springs This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 GALLUP EAST, NEW MEXICO 28 29 28 BIG ROCK HILL 29 HARD GROUND FLATS 42 GALLUP WEST 44 CHURCH ROCK 7.5 MINUTE SERIES SHEET NUMBER 43 OF 101 1000 0 1000 2000 3000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 57 TWIN BUTTES 58 BREAD SPRINGS 59 FORT WINGATE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO CHURCH ROCK QUADRANGLE SHEET NUMBER 44 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

108° 37'30"

715 000mE 716 717 Joins sheet 29, Hard Ground Flats 108° 35′00″ R. 17 W. 719 R. 16 W. 108° 32′30″ 108° 30′00″ 35° 37′30″ - 3945 35°37′30″ 19 245 26 35°35′00″ 108° 37′30″ 108° 32′30″ Joins sheet 59, Fort Wingate This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CHURCH ROCK, NEW MEXICO 28 BIG ROCK HILL 30 29 HARD GROUND FLATS 7.5 MINUTE SERIES 30 OAK SPRING SHEET NUMBER 44 OF 101 43 GALLUP EAST 45 PINEDALE 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 58 BREAD SPRINGS 59 60 59 FORT WINGATE
60 CINIZA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS





UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108°15′00″
749000mE 750 MCKINLEY COUNTY AREA, NEW MEXICO HOSTA BUTTE QUADRANGLE SHEET NUMBER 47 OF 101 Joins sheet 32, Crownpoint 108°12′30″ 108°10′00″ <sup>7</sup>57 R. 13 W. R. 12 W. <sup>7</sup>58 35° 35′00″ 35° 35′00″ 108°15′00″ Joins sheet 62, Thoreau This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HOSTA BUTTE, NEW MEXICO 31 DALTON PASS 33 32 CROWNPOINT
33 HEART ROCK
46 MARIANO LAKE
48 48 CASAMERO LAKE 7.5 MINUTE SERIES SHEET NUMBER 47 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 61 CONTINENTAL DIVIDE 62 63 63 THOREAU 63 THOREAU NE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO CASAMERO LAKE QUADRANGLE SHEET NUMBER 48 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 33, Heart Rock 108° 00′00″ 108° 07′ 30″ 108°05′00″ 108°02′30″ R. 12 W. 767 R. 11 W. 35° 37′30″ INDIAN 16 RESERVATION 35° 35′00″ 108° 02′30″ Joins sheet 63, Thoreau NE This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CASAMERO LAKE, NEW MEXICO 32 CROWNPOINT 34 33 HEART ROCK
34 LAGUNA CASTILLO
47 HOSTA BUTTE
49 49 BORREGO PASS 7.5 MINUTE SERIES SHEET NUMBER 48 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 62 THOREAU 63 HOREAU NE 64 GOAT MOUNTAIN North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

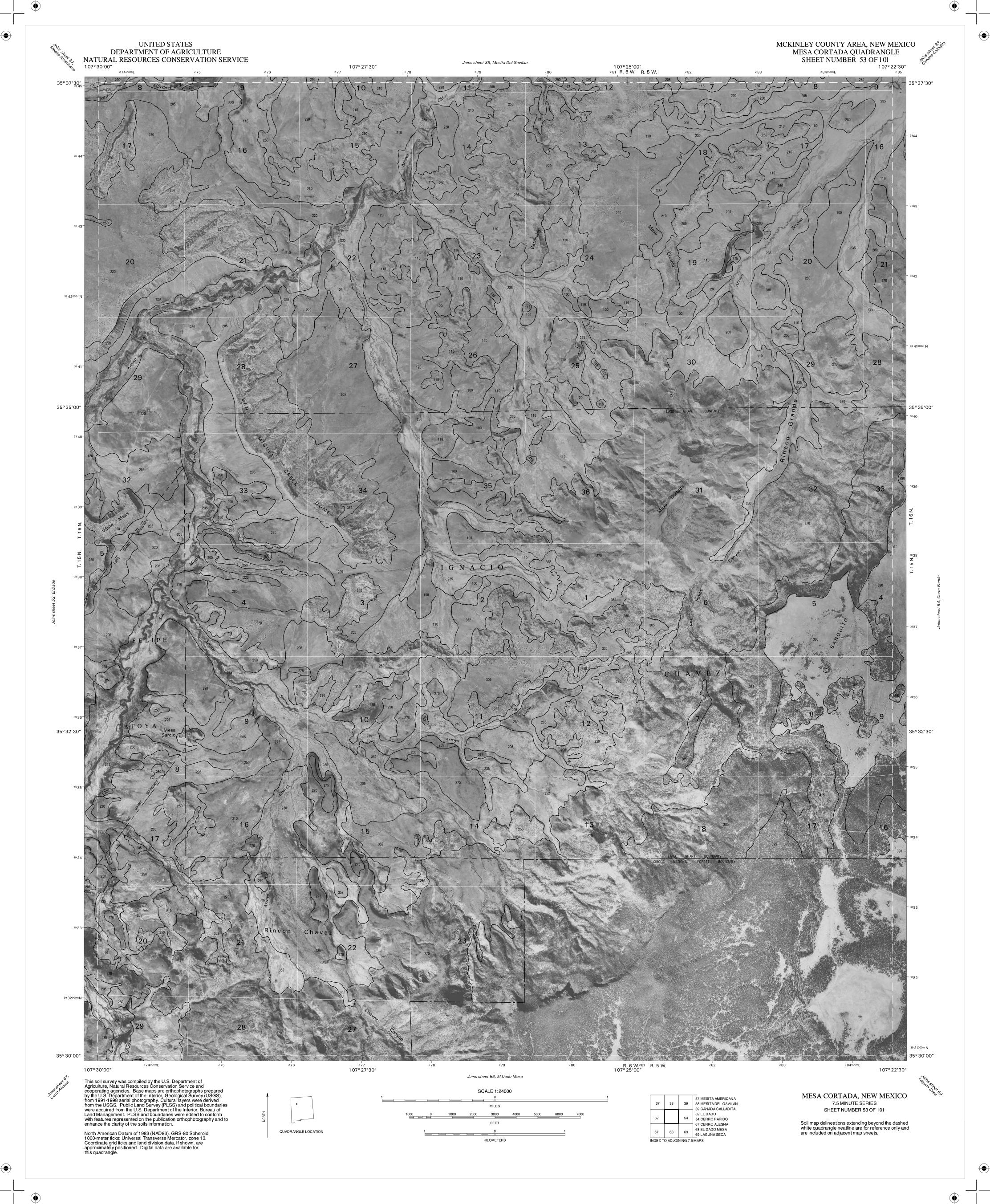
-<u>|</u>

MCKINLEY COUNTY AREA, NEW MEXICO BORREGO PASS QUADRANGLE SHEET NUMBER 49 OF 101 **UNITED STATES** DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 34, Laguna Castillo 107° 57′30″ 107°55′00″ 108° 00′00″ 107°52′30″ R. 11 W. 233 R. 10 W. 35° 37′30″ 35°37′30″ 35° 35′00″ 35° 35′00″ 108° 00′00″ 107° 55′ 00″ Joins sheet 64, Goat Mountain This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 BORREGO PASS, NEW MEXICO 33 HEART ROCK 35 34 LAGUNA CASTILLO . 0 7.5 MINUTE SERIES 35 ORPHAN ANNIE ROCK 48 CASAMERO LAKE 50 MESA DE LOS TOROS SHEET NUMBER 49 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 63 THOREAU NE 65 64 GOAT MOUNTAIN 65 AMBROSIA LAKE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 52′30″ MCKINLEY COUNTY AREA, NEW MEXICO MESA DE LOS TOROS QUADRANGLE SHEET NUMBER 50 OF 101 Joins sheet 35, Orphan Annie Rock 107° 50′00″ R. 10 W. 243 R. 9 W. 107° 45′00″ 251 107° 47′30″ ² 47 35° 37′30″ 35°37′30″ 35° 35′00″ 35°35′00″ 107°52′30″ 107° 47′30″ 107° 45′00″ Joins sheet 65, Ambrosia Lake This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 MESA DE LOS TOROS, NEW MEXICO 34 LAGUNA CASTILLO 36 35 ORPHAN ANNIE ROCK 7.5 MINUTE SERIES 36 HOSPAH
49 BORREGO PASS
51 PIEDRA DE LA AGUILA SHEET NUMBER 50 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 64 GOAT MOUNTAIN 65 AMBROSIA LAKE 66 SAN LUCAS DAM North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO PIEDRA DE LA AGUILA QUADRANGLE SHEET NUMBER 51 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 36, Hospah 107° 45′00″ 251 000mE 107° 37′ 30″ R. 8 W. <sup>2</sup>62 R. 7 W. 107° 42′30″ 107° 40′00″ R. 8 W. 35° 37′ 30″ 35° 35′00″ 35° 35′00″ <sub>–</sub> R. 7 W. <sup>262</sup> 107° 37′ 30″ 107° 45′00″ 107° 42′30″ 107° 40′00″ Joins sheet 66, San Lucas Dam This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 PIEDRA DE LA AGUILA, NEW MEXICO 35 ORPHAN ANNIE ROCK 37 36 HOSPAH 37 MESITA AMERICANA 50 MESA DE LOS TOROS 7.5 MINUTE SERIES SHEET NUMBER 51 OF 101 52 52 EL DADO Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 65 AMBROSIA LAKE 67 66 SAN LUCAS DAM 67 CERRO ALESNA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 37′30″ MCKINLEY COUNTY AREA, NEW MEXICO EL DADO QUADRANGLE SHEET NUMBER 52 OF 101 Joins sheet 37, Mesita Americana 107° 35′00″ 107° 32′30″ R. 7 W. R. 6 W. 272 35° 37′ 30″ 20 35° 35′00″ 107° 37′ 30″ 107° 32′30″ 107° 30′00″ Joins sheet 67, Cerro Alesna This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 EL DADO, NEW MEXICO 36 HOSPAH
37 MESITA AMERICANA
38 MESITA DEL GAVILAN
51 PIEDRA DE LA AGUILA
53 MESA CORTADA 7.5 MINUTE SERIES SHEET NUMBER 52 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 66 SAN LUCAS DAM 67 68 67 CERRO ALESNA 68 EL DADO MESA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS



UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 22′30″
285,000mE
206 MCKINLEY COUNTY AREA, NEW MEXICO CERRO PARIDO QUADRANGLE SHEET NUMBER 54 OF 101 107°15′00″ Joins sheet 39, Canada Calladita 107° 20′00″ 107°17′30″ R. 5 W. 35° 37′ 30″ 35° 37′30″ 12 35° 35′00″ 107°22′30″ 107°17′30″ 107°15′00″ Joins sheet 69, Laguna Seca This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CERRO PARIDO, NEW MEXICO 38 MESITA DEL GAVILAN 7.5 MINUTE SERIES 39 CANADA CALLADITA SHEET NUMBER 54 OF 101 53 MESA CORTADA 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 68 EL DADO MESA 69 LAGUNA SECA North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO SURRENDER CANYON QUADRANGLE SHEET NUMBER 55 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

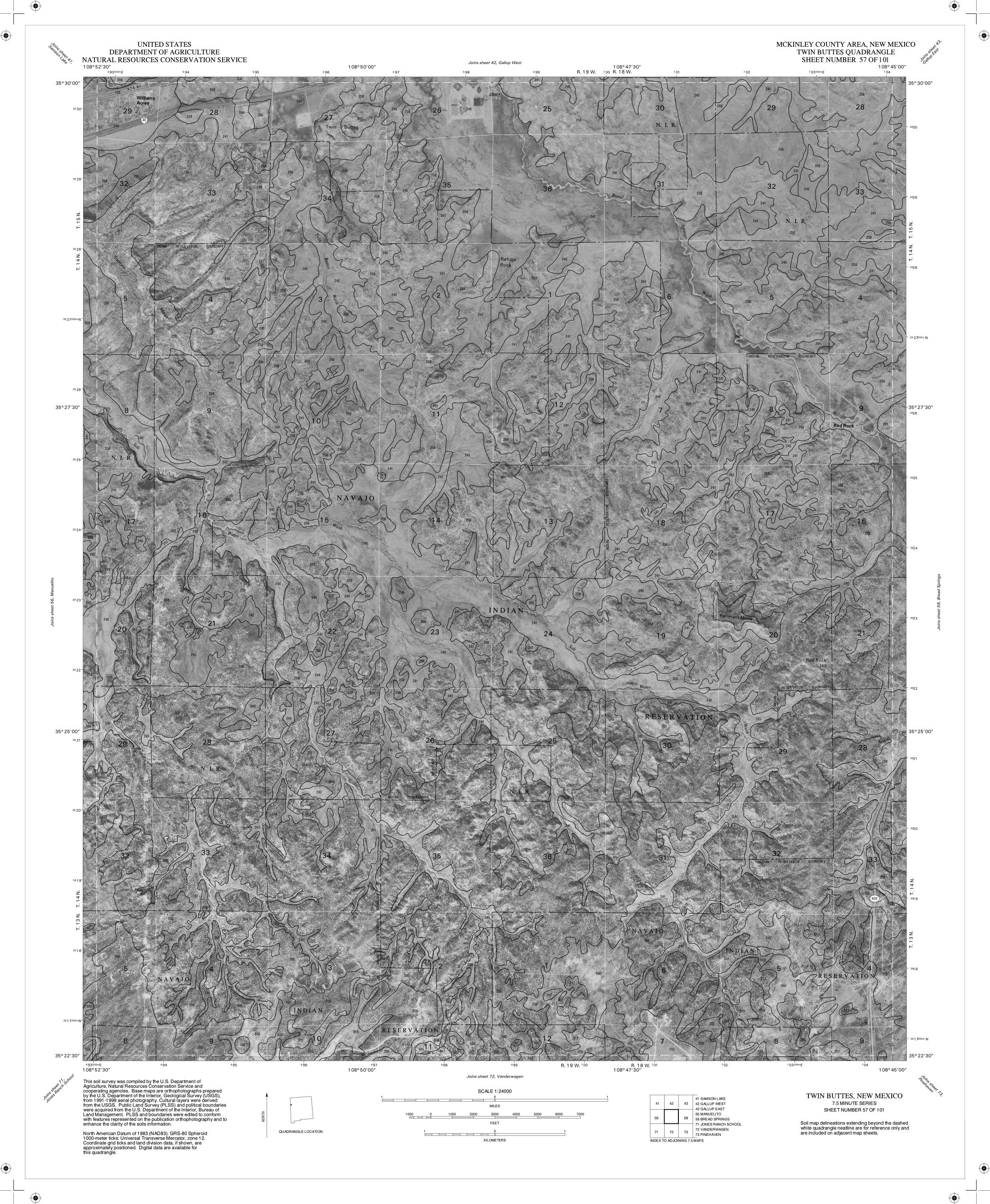
109° 07'30"

670000mE

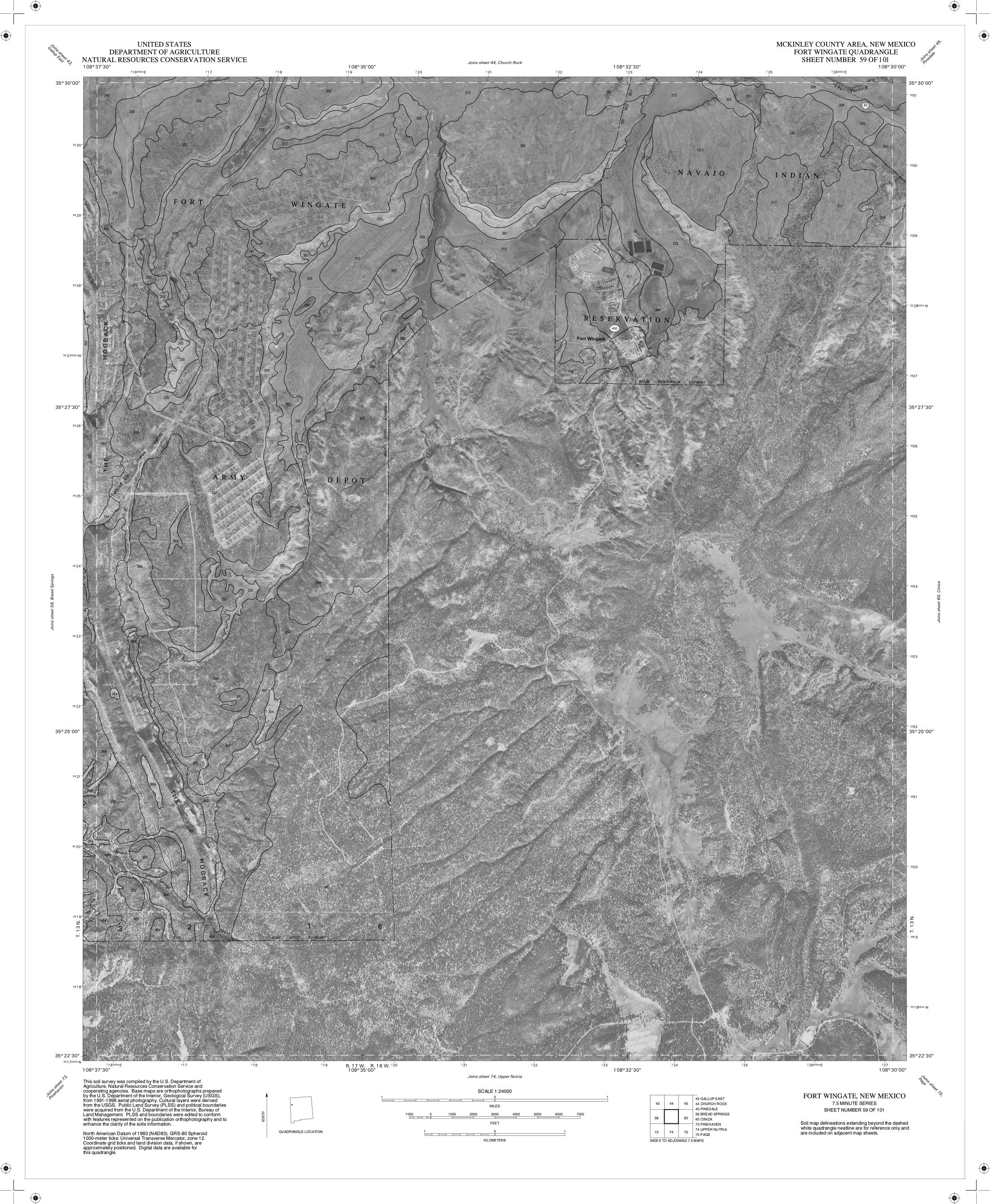
671

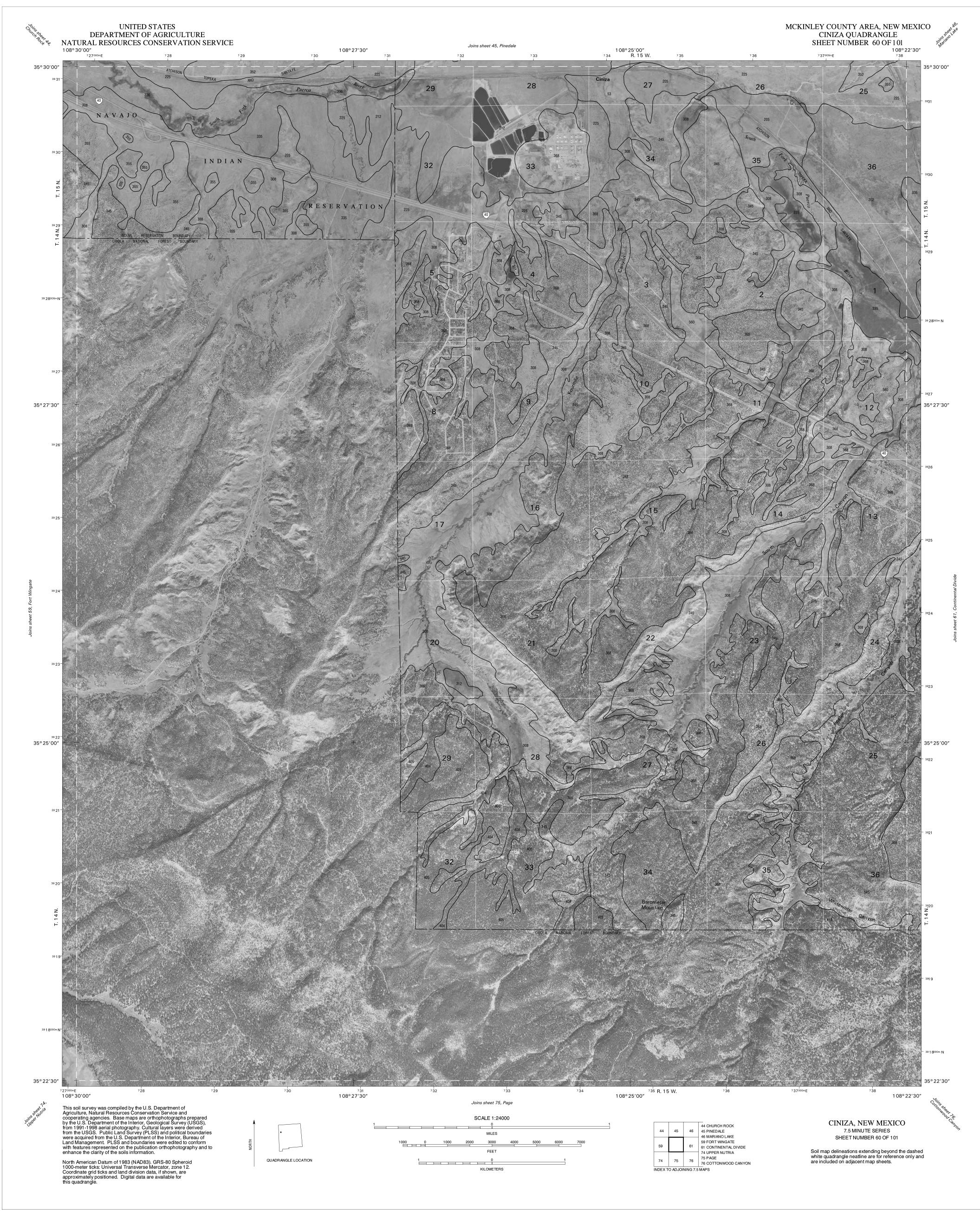
672 Joins sheet 40, Hunters Point 109°05′00″ 109°02′30″ 109°00′00″ <sup>6</sup>79 R. 21 W. 35°30′00″ 35° 30′00″ 39 26000m N 35° 27′ 30″ 35° 27′ 30″ 35° 25′ 00″ 109°07′30″ 109° 05′00″ 109°02′30″ 109°00′00″ Joins sheet 70, Lupton This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 SURRENDER CANYON, NEW MEXICO 41 40 HUNTERS POINT 41 SAMSON LAKE 7.5 MINUTE SERIES SHEET NUMBER 55 OF 101 56 MANUELITO Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 70 71 70 LUPTON 71 JONES RANCH SCHOOL North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO MANUELITO QUADRANGLE SHEET NUMBER 56 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 109° 00'00" Joins sheet 41, Samson Lake 108°57′30″ 108°55′00″ 108°52′30″ R. 20 W. 690 R. 19 W. 691 35°30′00″ 35° 30′00″ 35° 27′ 30″ 35° 27′ 30″ 109°00′00″ 108°55′00″ 108°52′30″ Joins sheet 71, Jones Ranch School This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 MANUELITO, NEW MEXICO 40 HUNTERS POINT
41 SAMSON LAKE
42 GALLUP WEST
55 SURRENDER CANYON 7.5 MINUTE SERIES SHEET NUMBER 56 OF 101 1000 0 1000 2000 3000 4000 5000 6000 7000 57 TWIN BUTTES Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 70 LUPTON 71 72 71 JONES RANCH SCHOOL 72 VANDERWAGEN North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS





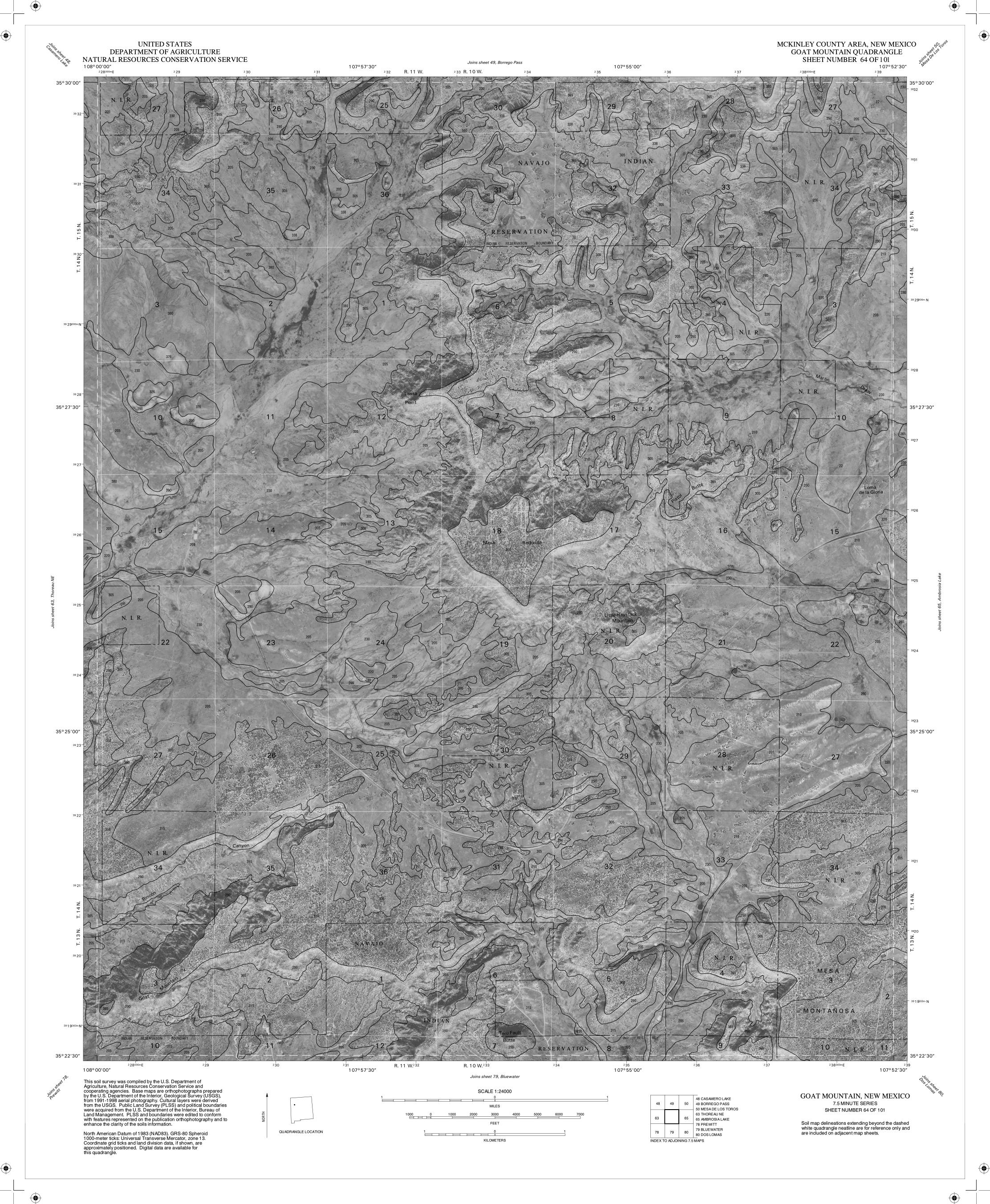






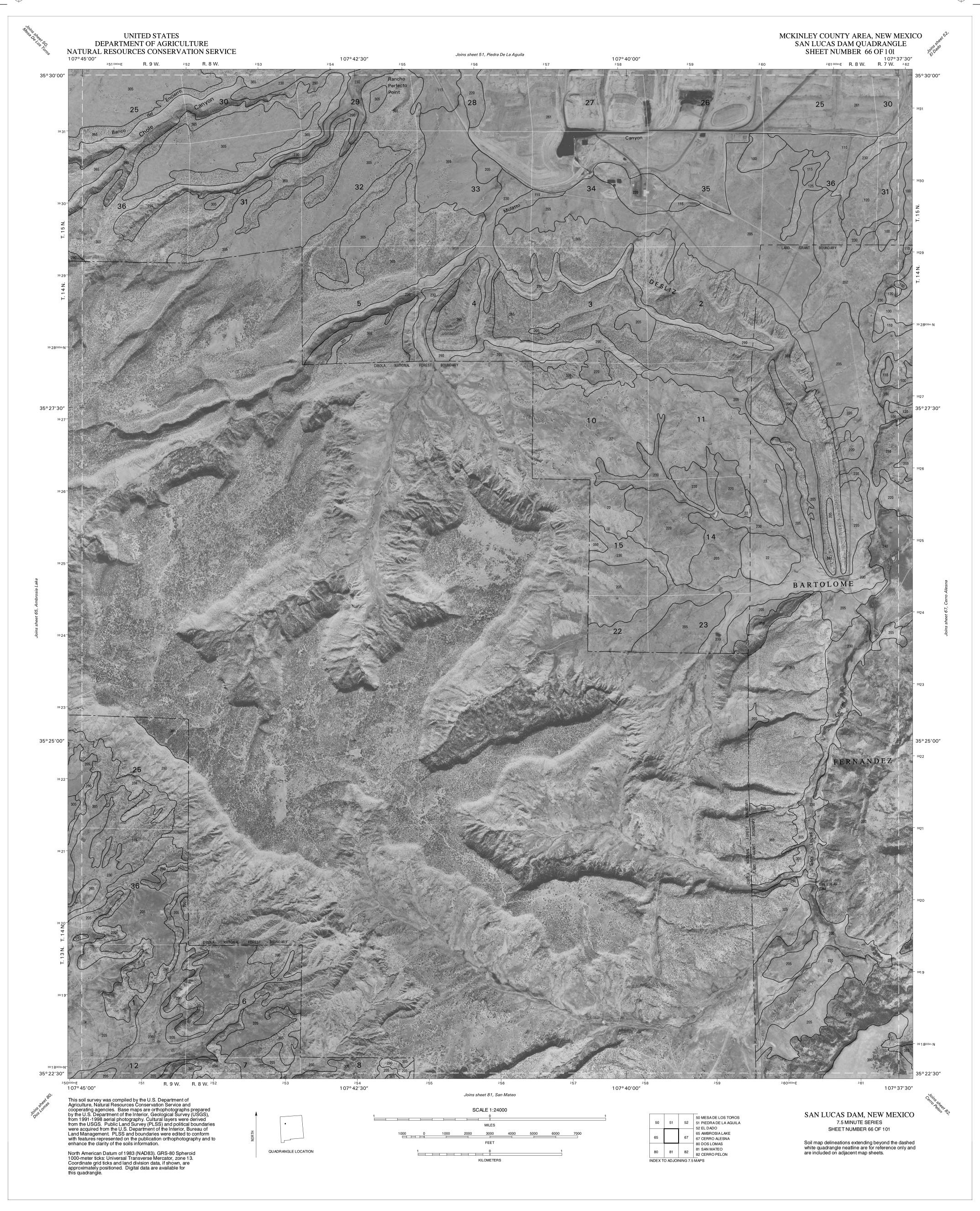
MCKINLEY COUNTY AREA, NEW MEXICO THOREAU QUADRANGLE SHEET NUMBER 62 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 47, Hosta Butte 108°12′30″ 108°10′00″ <sup>7</sup>57 108° 07′30″ R. 13 W. 35° 30′00″ 35° 27′ 30″ 35°27′30″ RESERVATION 35° 25′00″ 108°15′00″ 108° 07′30″ Joins sheet 77, Pine Canyon This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 THOREAU, NEW MEXICO 46 MARIANO LAKE
48 47 HOSTA BUTTE
48 CASAMERO LAKE
61 CONTINENTAL DIVIDE 7.5 MINUTE SERIES SHEET NUMBER 62 OF 101 63 63 THOREAU NE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 76 COTTONWOOD CANYON 78 78 PREWITT North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 07'30" MCKINLEY COUNTY AREA, NEW MEXICO THOREAU NE QUADRANGLE SHEET NUMBER 63 OF 101 Joins sheet 48, Casamero Lake 1 08° 00′00″ 108° 05′00″ 108° 02′30″ <sup>7</sup>67 R. 12 W. R. 11 W. <sup>7</sup>68 35° 30′00″ 35°30′00″ 34 INDIAN RESERVATION 35° 27′ 30″ 35° 27′ 30″ 108° 07′ 30″ Joins sheet 78, Prewitt This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 THOREAU NE, NEW MEXICO 47 HOSTA BUTTE
48 CASAMERO LAKE
49 BORREGO PASS
62 THOREAU 7.5 MINUTE SERIES SHEET NUMBER 63 OF 101 1000 0 1000 64 GOAT MOUNTAIN Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 77 PINE CANYON 79 79 BLUEWATER North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS



UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107°52′30″ MCKINLEY COUNTY AREA, NEW MEXICO AMBROSIA LAKE QUADRANGLE SHEET NUMBER 65 OF 101 Joins sheet 50, Mesa De Los Toros 107°50′00″ . ²43 107° 47′30″ 107° 45′00″ <sup>2</sup> 42 R. 10 W. R. 9 W. 35°30′00″ 35° 30′ 00″ 35° 27′ 30″ 35°27′30″ 107°52′30″ 107°50′00″ 107° 47′30″ Joins sheet 80, Dos Lomas This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 AMBROSIA LAKE, NEW MEXICO 49 BORREGO PASS
50 MESA DE LOS TOROS
51 PIEDRA DE LA AGUILA
64 GOAT MOUNTAIN
66 SAN LUCAS DAM 7.5 MINUTE SERIES SHEET NUMBER 65 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 79 BLUEWATER 80 81 80 DOS LOMAS 81 SAN MATEO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_





UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE MCKINLEY COUNTY AREA, NEW MEXICO EL DADO MESA QUADRANGLE SHEET NUMBER 68 OF 101 Joins sheet 53, Mesa Cortada 107°30′00″ 107° 27′ 30″ 107° 25′00″ 107°22′30″ R. 6 W. 35°30′00″ -35° 30′ 00″ 35° 27′ 30″ 35° 27′ 30″ <sup>39</sup> 22 35° 25′00″ 107° 30′00″ 107° 25′00″ Joins sheet 83, Laguna Canoneros This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 EL DADO MESA, NEW MEXICO 52 EL DADO
53 MESA CORTADA
54 CERRO PARIDO
67 CERRO ALESNA
69 LAGUNA SECA 7.5 MINUTE SERIES SHEET NUMBER 68 OF 101 1000 0 1000 2000 3000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 82 CERRO PELON 84 83 LAGUNA CANONEROS 84 MARQUEZ North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 22′30″ MCKINLEY COUNTY AREA, NEW MEXICO LAGUNA SECA QUADRANGLE SHEET NUMBER 69 OF 101 107°15′00″ Joins sheet 54, Cerro Parido 107° 20′00″ 107°17′30″ 35° 30′00″ 35° 30′00″ 35° 27′ 30″ 107° 22′30″ 107°17′30″ 107°15′00″ Joins sheet 84, Marquez This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 LAGUNA SECA, NEW MEXICO 53 MESA CORTADA 7.5 MINUTE SERIES 54 CERRO PARIDO SHEET NUMBER 69 OF 101 68 EL DADO MESA 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 83 LAGUNA CANONEROS 84 MARQUEZ North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS



MCKINLEY COUNTY AREA, NEW MEXICO VANDERWAGEN QUADRANGLE SHEET NUMBER 72 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

108° 52′30″

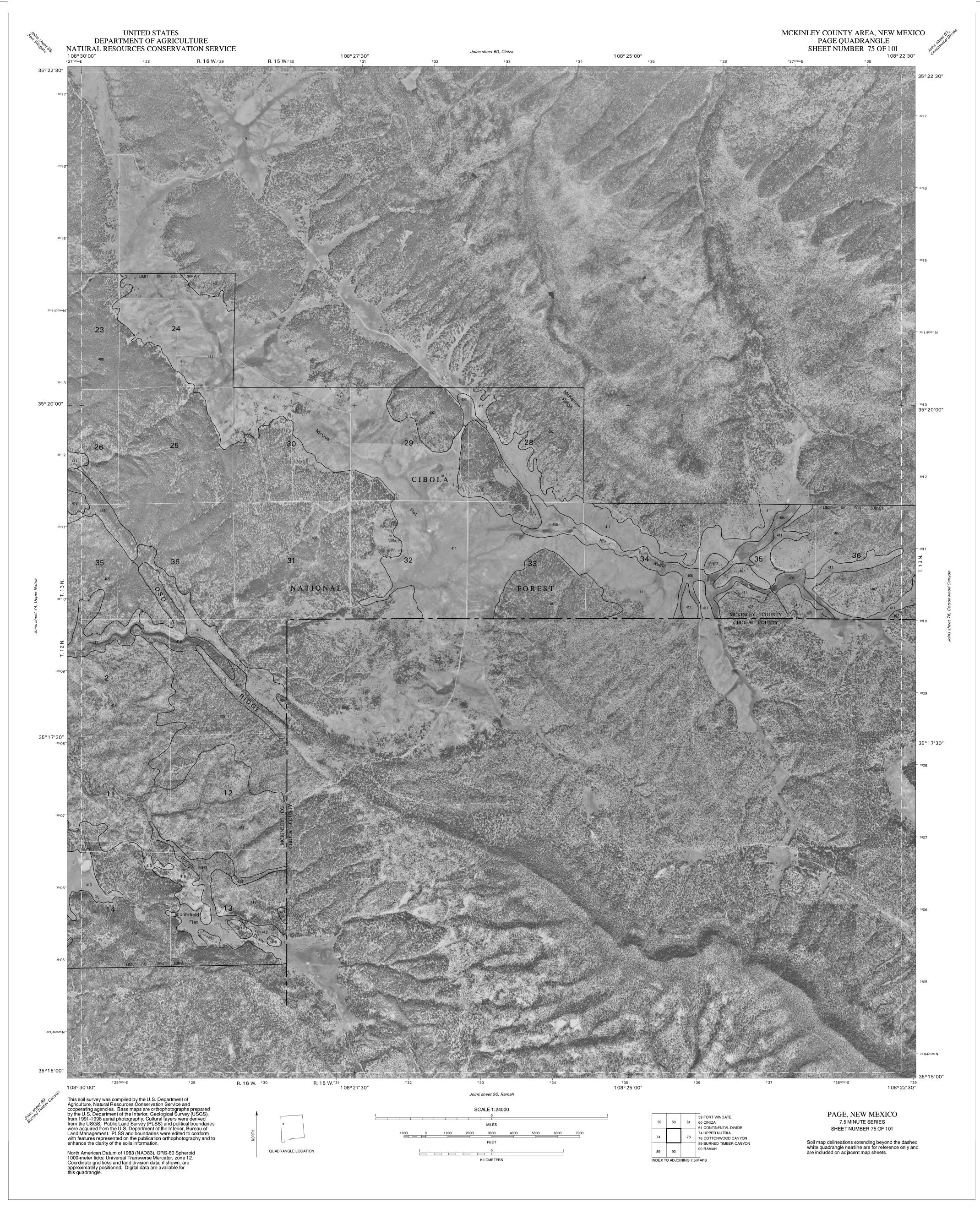
693000mE

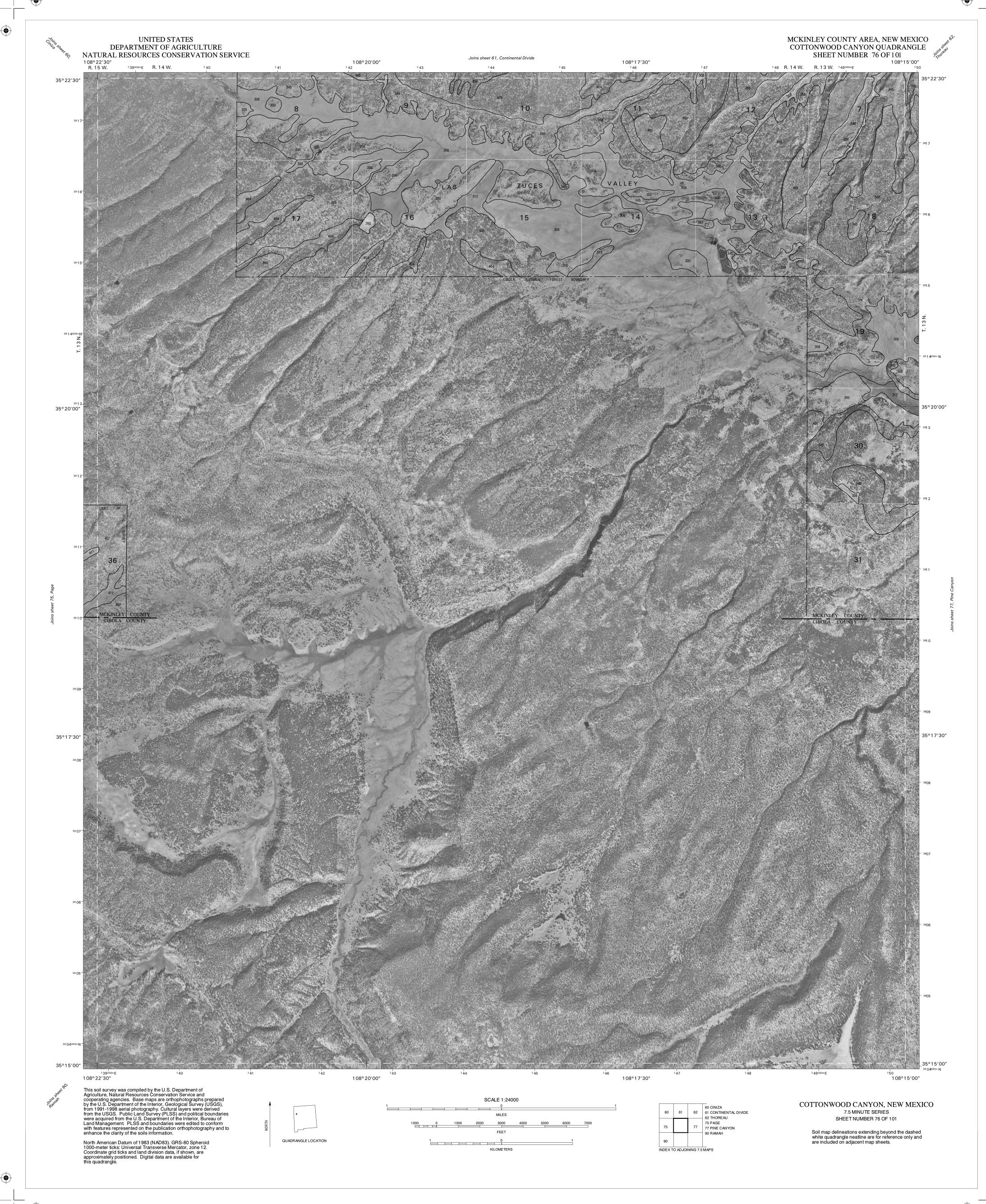
694

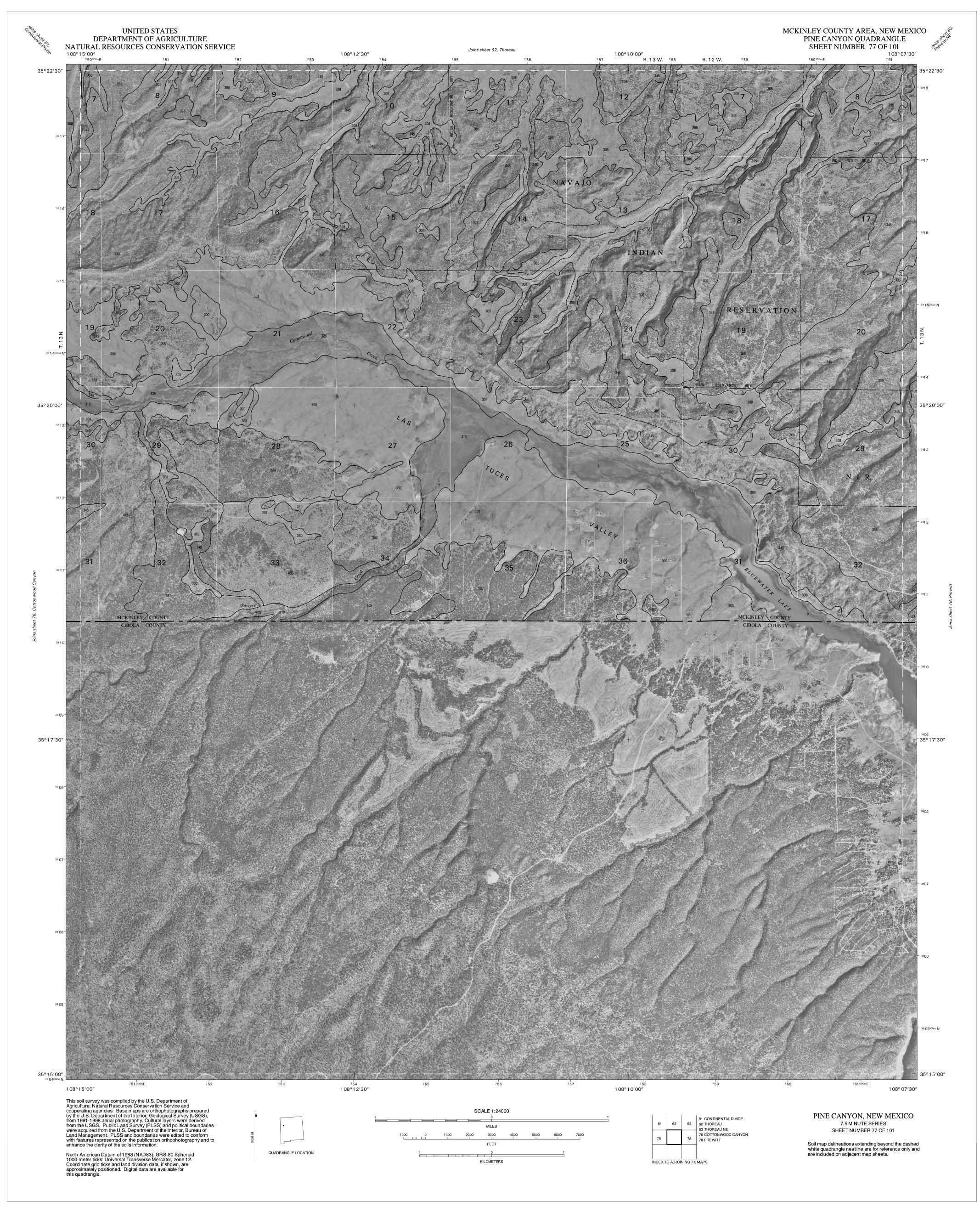
695 Joins sheet 57, Twin Buttes 1 08° 47′30″ R. 18 W.<sup>7</sup> 01 108°50′00″ 108° 45′00″ R. 19 W. 700 35°22′30″ 35°22′30″ 35° 20′ 00″ 35°20′00″ NAVAJO INDIAN 108°52′30″ 108° 47′30″ Joins sheet 87, Vanderwagen Draw This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 VANDERWAGEN, NEW MEXICO 56 MANUELITO
57 TWIN BUTTES
58 BREAD SPRINGS
71 JONES RANCH SCHOOL
73 PINEHAVEN 7.5 MINUTE SERIES SHEET NUMBER 72 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 86 CHI CHIL TAH 87 VANDERWAGEN DRAW 88 HORSEHEAD CANYON NW North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO PINEHAVEN QUADRANGLE SHEET NUMBER 73 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108° 45′00″ Joins sheet 58, Bread Springs 108° 42′30″ 108° 40′00″ R. 18 W. 710 R. 17 W. 35°22′30″ 35°20′00″ 35° 20′ 00″ INDIAN 108° 45′00″ 108° 40′00″ Joins sheet 88, Horsehead Canyon NW This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 PINEHAVEN, NEW MEXICO 57 TWN BUTTES
58 BREAD SPRINGS
59 FORT WINGATE
72 VANDERWAGEN
74 UPPER NUTRIA 7.5 MINUTE SERIES SHEET NUMBER 73 OF 101 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 87 VANDERWAGEN DRAW 88 HORSEHEAD CANYON NW 89 BURNED TIMBER CANYON North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO UPPER NUTRIA QUADRANGLE SHEET NUMBER 74 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108° 37'30" Joins sheet 59, Fort Wingate 108° 35′00″ R. 17 W. R. 16 W.<sup>7</sup> 20 108° 30′00″ 108° 32′30″ 35° 22′30″\_\_\_\_\_\_ 35° 22′30″ 35° 20′ 00″ 35° 20′ 00″ 108° 37′ 30″ Joins sheet 89, Burned Timber Canyon This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 UPPER NUTRIA, NEW MEXICO 58 BREAD SPRINGS 60 59 FORT WINGATE 7.5 MINUTE SERIES 60 CINIZA 73 PINEHAVEN SHEET NUMBER 74 OF 101 1000 0 1000 2000 3000 75 | 75 PAGE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 88 HORSEHEAD CANYON NW 90 89 BURNED TIMBER CANYON 90 RAMAH North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS







MCKINLEY COUNTY AREA, NEW MEXICO PREWITT QUADRANGLE SHEET NUMBER 78 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 63, Thoreau NE 108°07′30″ 761 000mE 1 08° 05′00″ 108°02′30″ 108°00′00″ <sup>7</sup>67 R. 12 W. <sup>7</sup>68 R. 11 W. <sup>7</sup> 72 35° 22′30″ 35° 22′30″ INDIAN RESERVATION - <sup>391 4</sup> 35° 20′00″ 35° 20′00″ NAVAJO INDIAN 108° 07′30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 PREWITT, NEW MEXICO 62 THOREAU
63 THOREAU NE
64 GOAT MOUNTAIN
77 PINE CANYON
79 BLUEWATER 7.5 MINUTE SERIES SHEET NUMBER 78 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO BLUEWATER QUADRANGLE SHEET NUMBER 79 OF 101 UNITED STATES

DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 64, Goat Mountain 107° 55′00″ ² 35 107°57′30″ 107°52′30″ R. 11 W.<sup>2</sup>32 R. 10 W. 233 35° 22′ 30″ RESERVATION 35° 20′ 00″ 35° 20′ 00″ N. I. R. 107°55′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 BLUEWATER, NEW MEXICO 63 THOREAU NE 65 64 GOAT MOUNTAIN 7.5 MINUTE SERIES 65 AMBROSIA LAKE 78 PREWITT SHEET NUMBER 79 OF 101 80 DOS LOMAS Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO DOS LOMAS QUADRANGLE SHEET NUMBER 80 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

107° 52'30"

239000mE 240 24 Joins sheet 65, Ambrosia Lake R. 10 W. <sup>2</sup> 42 R. 9 W. 107° 45′00″ 250 107° 47′30″ 35° 22′30″ 35° 22′30″ INDIAN 35° 20′ 00″ 35° 20′ 00″ RESERVATION 35°17′30″ 107° 47′30″ 107° 45′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 DOS LOMAS, NEW MEXICO 66 64 GOAT MOUNTAIN 65 AMBROSIA LAKE 66 SAN LUCAS DAM 79 BLUEWATER 81 81 SAN MATEO 7.5 MINUTE SERIES SHEET NUMBER 80 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 45'00"
250000mE 251 5 6 77 MCKINLEY COUNTY AREA, NEW MEXICO SAN MATEO QUADRANGLE SHEET NUMBER 81 OF 101

107° 37′30″
R. 8 W. 261 R. 7 W. Joins sheet 66, San Lucas Dam 107° 42′30″ ²54 107° 40′00″ 35° 22′30″ 35°22′30″ MCKINLEY COUNTY
CIBOLA COUNTY 35° 20′ 00″ 3913 35°20′00″ 107° 45′00″ 107° 42′30″ 107° 40′00″ 107° 37′ 30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 SAN MATEO, NEW MEXICO 65 AMBROSIA LAKE
66 SAN LUCAS DAM
67 CERRO ALESNA
80 DOS LOMAS
82 CERRO PELON 7.5 MINUTE SERIES SHEET NUMBER 81 OF 101 1000 0 1000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 37′30″ MCKINLEY COUNTY AREA, NEW MEXICO
CERRO PELON QUADRANGLE
SHEET NUMBER 82 OF 101
107° 30′00″
6 W. 272000mE 273 Joins sheet 67, Cerro Alesna 107° 32′30″ 107°35′00″ <sup>2</sup> 71 R. 6 W. 35° 22′30″. 35° 22′30″ FERNANDEZ 35° 20′ 00″ 35° 20′ 00″ 107° 37′30″ 107° 32′30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CERRO PELON, NEW MEXICO 66 SAN LUCAS DAM
67 CERRO ALESNA
68 EL DADO MESA
81 SAN MATEO
83 LAGUNA CANONEROS 7.5 MINUTE SERIES SHEET NUMBER 82 OF 101 1000 0 1000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

-<u>|</u>

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 30′00″
273000mE 274 MCKINLEY COUNTY AREA, NEW MEXICO LAGUNA CANONEROS QUADRANGLE SHEET NUMBER 83 OF 1 01

107° 22′30″
284 Joins sheet 68, El Dado Mesa 107° 27′ 30″ 107° 25′00″ 2 78 35° 22′30″ 391 7 35° 22′30″ 39 **1** 4000m **N** CEBOLLETA 35° 20′ 00″ 35° 20′00″ 107° 30′00″ 107° 25′00″ 107° 22′30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 LAGUNA CANONEROS, NEW MEXICO 67 CERRO ALESNA 68 EL DADO MESA 69 LAGUNA SECA 82 CERRO PELON 7.5 MINUTE SERIES SHEET NUMBER 83 OF 101 1000 0 1000 2000 3000 84 MARQUEZ Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
107° 22′30″ MCKINLEY COUNTY AREA, NEW MEXICO MARQUEZ QUADRANGLE SHEET NUMBER 84 OF 101 107°15′00″ Joins sheet 69, Laguna Seca 107° 20′00″ 107°17′30″ 35° 22′30″ 35° 22′30″ 35° 20′ 00″ 35°20′00″ CEBOLLETA 107°17′30″ 107°15′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 MARQUEZ, NEW MEXICO 68 EL DADO MESA 7.5 MINUTE SERIES 69 LAGUNA SECA SHEET NUMBER 84 OF 101 83 LAGUNA CANONEROS Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 13. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 1 0 KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_

**-** | -

MCKINLEY COUNTY AREA, NEW MEXICO CHAFIN WELL QUADRANGLE SHEET NUMBER 85 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 109° 07′30″ Joins sheet 70, Lupton 109°00′00″ 109°05′00″ 109°02′30″ R. 21 W. 680 35°15′00″ 35°15′00″ N. I. R. 22 RESERVATIO 35°12′30″ 35°12′30″ 35°10′00″ INDIAN 109°05′00″ 109° 00′00″ Joins sheet 91, High Lonesome Well This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CHAFIN WELL, NEW MEXICO 71 70 LUPTON
71 JONES RANCH SCHOOL 7.5 MINUTE SERIES SHEET NUMBER 85 OF 101 86 CHI CHIL TAH Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 91 HIGH LONESOME WELL 92 TEKAPO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_\_\_

MCKINLEY COUNTY AREA, NEW MEXICO CHI CHIL TAH QUADRANGLE SHEET NUMBER 86 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 71, Jones Ranch School 109°00′00″ 682000mE 108°52′30″ 108°57′30″ 108°55′00″ 691 R. 20 W. 35°15′00″ 35°15′00″ NAVAJO NAVAJO -35°12′30″ 35°12′30″ RESERVATION RESERVATION 109°00′00″ 108°57′30″ 108°55′00″ 108°52′30″ Joins sheet 92, Tekapo This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CHI CHIL TAH, NEW MEXICO 70 LUPTON
71 JONES RANCH SCHOOL
72 VANDERWAGEN
85 CHAFIN WELL 7.5 MINUTE SERIES SHEET NUMBER 86 OF 101 1000 0 1000 2000 3000 87 VANDERWAGEN DRAW Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 91 HIGH LONESOME WELL 92 93 92 TEKAPO 93 ZUNI North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO VANDERWAGEN DRAW QUADRANGLE SHEET NUMBER 87 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 72, Vanderwagen 108° 47′30″ <sup>7</sup>01 R. 19 W. R. 18 W. 108° 45′00″ 108° 52′30″ 108°50′00″ 35°15′00″ 35°15′00″ NAVAJO INDIAN 31 RESERVATION 35°12′30″-<sup>⊩</sup> 35°12′30″ 35°10′00″ <sup>01</sup> R. 19 W. 108° 47′30″ 108°52′30″ 108°50′00″ 108° 45′00″ Joins sheet 93, Zuni This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 VANDERWAGEN DRAW, NEW MEXICO 71 JONES RANCH SCHOOL 72 73 72 VANDERWAGEN 7.5 MINUTE SERIES 73 PINEHAVEN SHEET NUMBER 87 OF 101 86 CHI CHIL TAH 88 HORSEHEAD CANYON NW 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 92 TEKAPO 93 94 94 94 HORSEHEAD CANYON North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO HORSEHEAD CANYON NW QUADRANGLE SHEET NUMBER 88 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108° 45′00″ Joins sheet 73, Pinehaven 108° 37′30″ 108° 42′30″ 108° 40′00″ R. 18 W. 711 R. 17 W. 35°15′00″ 35°15′00″ 35°12′30″ 35°12′30″ 108° 45′00″ 108° 40′00″ 108° 37′ 30″ Joins sheet 94, Horsehead Canyon This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HORSEHEAD CANYON NW, NEW MEXICO 72 VANDERWAGEN
73 74 73 PINEHAVEN
74 UPPER NUTRIA
87 VANDERWAGEN DRAW 7.5 MINUTE SERIES SHEET NUMBER 88 OF 101 1000 0 1000 2000 3000 4000 5000 6000 7000 89 89 BURNED TIMBER CANYON Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 93 ZUNI 94 95 94 HORSEHEAD CANYON 95 PESCADO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO BURNED TIMBER CANYON QUADRANGLE SHEET NUMBER 89 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

108° 37′30″

716000mE

717

718 Joins sheet 74, Upper Nutria 108° 35′00″ 108° 32′30″ 108° 30′00″ R. 17 W. R. 16 W.<sup>7</sup>21 35°15′00″ 35°15′00″ 35°12′30″ 35°12′30″ 108° 37′30″ 108° 30′00″ Joins sheet 95, Pescado This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 BURNED TIMBER CANYON, NEW MEXICO 73 PINEHAVEN 75 74 UPPER NUTRIA 7.5 MINUTE SERIES 75 PAGE 88 HORSEHEAD CANYON NW SHEET NUMBER 89 OF 101 1000 0 1000 2000 3000 90 RAMAH Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 94 HORSEHEAD CANYON 95 PESCADO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
108° 30′00″ MCKINLEY COUNTY AREA, NEW MEXICO RAMAH QUADRANGLE SHEET NUMBER 90 OF 101 108° 22′30″ Joins sheet 75, Page 108° 27′30″ 108° 25′00″ R. 16 W. 729 35°15′00″ 35°15′00″ 35°12′30″ 35°12′30″ 108° 30′00″ 108° 27′ 30″ 108° 22′30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 RAMAH, NEW MEXICO 74 UPPER NUTRIA
75 PAGE
76 COTTONWOOD CANYON
89 BURNED TIMBER CANYON 7.5 MINUTE SERIES SHEET NUMBER 90 OF 101 1000 0 1000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 95 PESCADO North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_\_\_

MCKINLEY COUNTY AREA, NEW MEXICO HIGH LONESOME WELL QUADRANGLE SHEET NUMBER 91 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

109° 07′30″

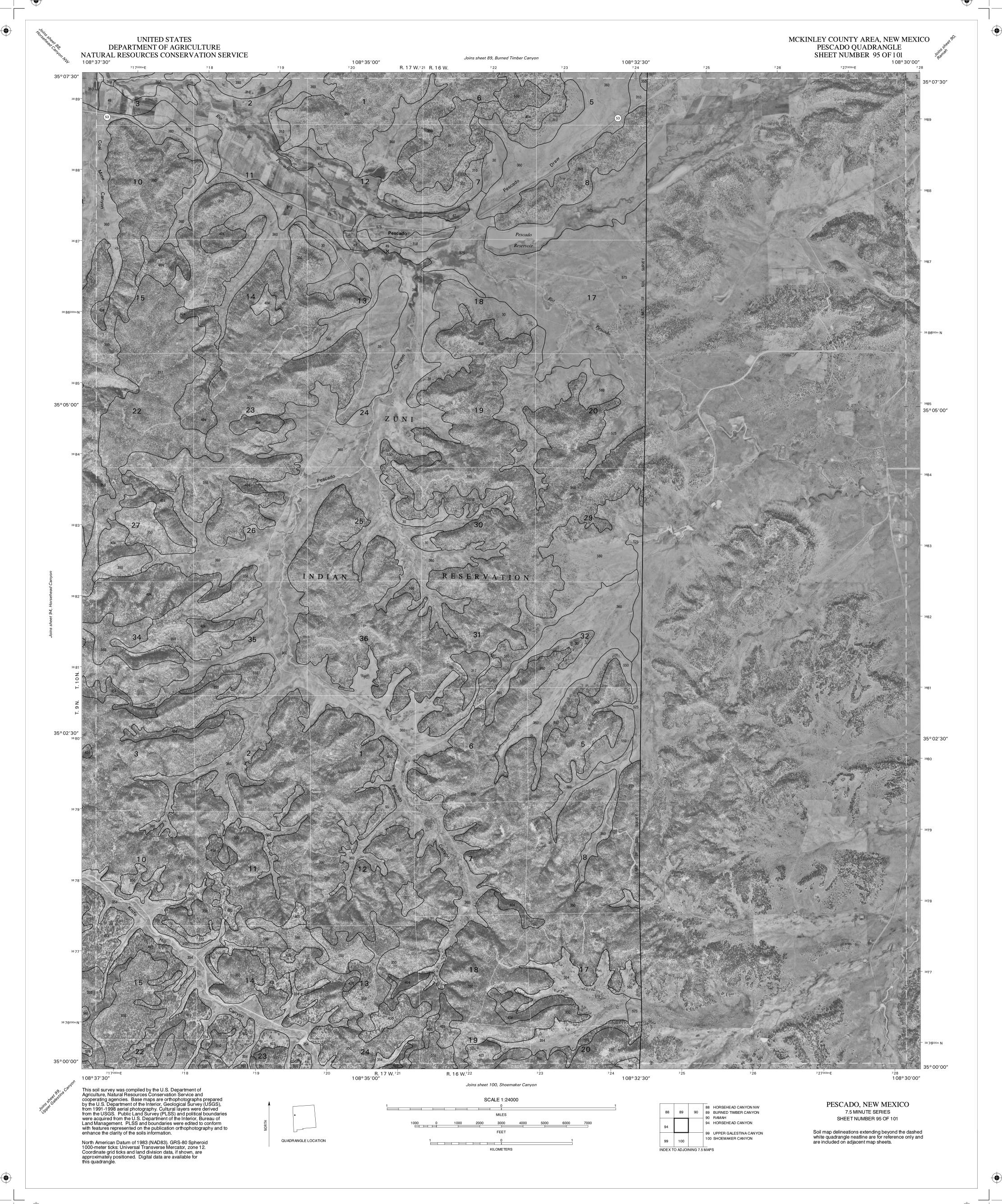
671 000mE 672 673 Joins sheet 85, Chafin Well 109° 00′00″ 109°02′30″ 109°05′00″ <sup>6</sup> <sup>80</sup> R. 21 W. 35°07′30″ 35°07′30″ ZUNI 38 85000m N - 3884 35° 05′00″ 35° 05′00″ INDIAN 35° 02′30″ 38 79 109°05′00″ 109°00′00″ Joins sheet 96, Barth Well This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 HIGH LONESOME WELL, NEW MEXICO 86 85 CHAFIN WELL 86 CHI CHIL TAH 7.5 MINUTE SERIES SHEET NUMBER 91 OF 101 92 92 TEKAPO Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 97 96 BARTH WELL 97 OJO CALIENTE RESERVOIR North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO TEKAPO QUADRANGLE SHEET NUMBER 92 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE
109°00'00"
R. 21 W. R. 20 W. 683000mE 684 Joins sheet 86, Chi Chil Tah 108°57′30″ 108°55′00″ R. 20 W. 692 R. 19 W. 35° 07′30″ 16 35° 05′00″ ZUNI27 INDIAN RESERVATION 35°02′30″ 108°57′30″ 108°55′00″ 108°52′30″ Joins sheet 97, Ojo Caliente Reservoir This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 TEKAPO, NEW MEXICO 85 CHAFIN WELL 87 86 CHI CHIL TAH 87 VANDERWAGEN DRAW 7.5 MINUTE SERIES SHEET NUMBER 92 OF 101 91 HIGH LONESOME WELL 93 | 93 ZUNI Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 96 BARTH WELL 97 OJO CALIENTE RESERVOIR 98 PLUMASANO BASIN North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO ZUNI QUADRANGLE SHEET NUMBER 93 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108°52'30" Joins sheet 87, Vanderwagen Draw 108° 47′30″ 701 R. 19 W. 108°50′00″ 108° 45′00″ <sup>7</sup>02 R. 18 W. 35° 07′30″ 35° 05′ 00″ 35°05′00″ RESERVATION 108°52′30″ 108°50′00″ 108° 47′30″ 108° 45′00″ Joins sheet 98, Plumasano Basin This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 ZUNI, NEW MEXICO 86 CHI CHIL TAH
87 VANDERWAGEN DRAW
88 HORSEHEAD CANYON NW 7.5 MINUTE SERIES SHEET NUMBER 93 OF 101 92 TEKAPO 94 HORSEHEAD CANYON Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 97 OJO CALIENTE RESERVOIR 98 PLUMASANO BASIN 99 UPPER GALESTINA CANYON North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO HORSEHEAD CANYON QUADRANGLE SHEET NUMBER 94 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 88, Horsehead Canyon NW 108° 45′00″ 705000mE 108° 42′30″ 108° 40′00″ <sup>7</sup>11 R. 18 W. R. 17 W. 35°07′30″ 35° 07′30″ 35°05′00″ 35° 05′00″ 108° 42′30″ 108° 40′00″ Joins sheet 99, Upper Galestina Canyon This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 87 VANDERWAGEN DRAW
88 HORSEHEAD CANYON NW
89 BURNED TIMBER CANYON
93 ZUNI
95 PESCADO
98 PLUMASANO BASIN
99 UPPER GALESTINA CANYON
100 SHOEMAKER CANYON HORSEHEAD CANYON, NEW MEXICO 7.5 MINUTE SERIES SHEET NUMBER 94 OF 101 1000 0 1000 2000 3000 4000 5000 6000 7000 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

\_\_\_\_\_



MCKINLEY COUNTY AREA, NEW MEXICO BARTH WELL QUADRANGLE SHEET NUMBER 96 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE
109° 07'30"
671 0000mE 672 673 Joins sheet 91, High Lonesome Well 109° 05′00″ 109° 00′ 00″ 109° 02′30″ 680 R. 21 W. 35°00′00″ 35°00′00″ 34°57′30″ 34° 57′ 30″ 34°55′00″ 109° 07′30″ 109° 05′00″ 109° 02′30″ 109° 00′00″ Joins sheet 101, Ceadro Spring SE This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 BARTH WELL, NEW MEXICO 92 91 HIGH LONESOME WELL 92 TEKAPO 7.5 MINUTE SERIES SHEET NUMBER 96 OF 101 97 OJO CALIENTE RESERVOIR Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET 101 CEADRO SPRING SE North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION INDEX TO ADJOINING 7.5 MAPS

\_\_\_

MCKINLEY COUNTY AREA, NEW MEXICO UNITED STATES OJO CALIENTE RESERVOIR QUADRANGLE SHEET NUMBER 97 OF 101 DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 92, Tekapo 108°55′00″ 109° 00′ 00″ R. 21 W. 108° 57′ 30″ 683000mE R. 20 W. 692 R. 20 W. R. 19 W. 693000mE 35° 00′00″ 38 **71** 000m**N** — 34° 57′30″ 38 70-34°52′30″ 683000mE R. 21 W. R. 20 W. 108° 52′30″ 684 685 690 <sup>6</sup>93000mE R. 19 W. 687 692 R. 20 W. 108° 57′ 30″ 108° 55′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 OJO CALIENTE RESERVOIR, NEW MEXICO 91 HIGH LONESOME WELL 93 92 TEKAPO 7.5 MINUTE SERIES MILES 93 ZUNI SHEET NUMBER 97 OF 101 96 BARTH WELL
98 PLUMASANO BASIN
101 CEADRO SPRING SE Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

UNITED STATES MCKINLEY COUNTY AREA, NEW MEXICO DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE PLUMASANO BASIN QUADRANGLE SHEET NUMBER 98 OF 101 Joins sheet 93, Zuni 108° 52′30″ 694000mE 108° 50′00″ R. 18 W. 35°00′00″ ZUNI MCKINLEY COUNTY CIBOLA COUNTY 34° 57′ 30″ 34°57′30″ INDIAN RESERVATION 695000mE R. 19 W. 702 108° 47′30″ 697 700 703 7 05 000mE <sup>69</sup>8 108° 50′00″ R. 18 W. 704 108° 52′30″ 108° 45′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 PLUMASANO BASIN, NEW MEXICO 92 TEKAPO 94 93 ZUNI 7.5 MINUTE SERIES MILES 94 HORSEHEAD CANYON 97 OJO CALIENTE RESERVOIR 99 UPPER GALESTINA CANYON SHEET NUMBER 98 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO UPPER GALESTINA CANYON QUADRANGLE SHEET NUMBER 99 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE Joins sheet 94, Horsehead Canyon 108° 45′00″ 108° 42′30″ 108° 40′00″ 108° 37′ 30″ 711 R. 18 W. <sup>7</sup>12 R. 17 W. 35°00′00″ 35°00′00″ MCKINLEY COUNTY CIBOLA COUNTY 34° 57′ 30″ INDIAN 108° 42′30″ 108° 40′00″ 108° 37′ 30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 UPPER GALESTINA CANYON, NEW MEXICO 93 ZUNI 95 94 HORSEHEAD CANYON 95 PESCADO 98 PLUMASANO BASIN 7.5 MINUTE SERIES SHEET NUMBER 99 OF 101 100 SHOEMAKER CANYON Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION KILOMETERS INDEX TO ADJOINING 7.5 MAPS

**(** 

MCKINLEY COUNTY AREA, NEW MEXICO SHOEMAKER CANYON QUADRANGLE SHEET NUMBER 100 OF 101

108° 30'00"
727000mE 728 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 108° 35′00″ R. 17 W. 721 Joins sheet 95, Pescado 108° 37′30″ 108° 32′30″ R. 16 W. 722 35°00′00″ 35°00′00″ 34° 57′ 30″ 34° 57′ 30″ RESERVATION 108° 37′30″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 SHOEMAKER CANYON, NEW MEXICO 94 HORSEHEAD CANYON 7.5 MINUTE SERIES 95 PESCADO SHEET NUMBER 100 OF 101 99 UPPER GALESTINA CANYON Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 1 0 INDEX TO ADJOINING 7.5 MAPS

MCKINLEY COUNTY AREA, NEW MEXICO CEADRO SPRING SE QUADRANGLE SHEET NUMBER 101 OF 101 UNITED STATES DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 109° 07'30" Joins sheet 96, Barth Well 109°00′00″ 682000mE R. 21 W. R. 20 W. 109° 05′00″ 109° 02′30″ 34°52′30″ RESERVATION 34° 50′00″ 34° 50′ 00″ 109° 07′30″ 109° 05′00″ 109° 02′30″ 109° 00′00″ This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey (USGS), from 1991-1998 aerial photography. Cultural layers were derived from the USGS. Public Land Survey (PLSS) and political boundaries were acquired from the U.S. Department of the Interior, Bureau of Land Management. PLSS and boundaries were edited to conform with features represented on the publication orthophotography and to enhance the clarity of the soils information. SCALE 1:24000 CEADRO SPRING SE, NEW MEXICO 97 96 BARTH WELL 97 OJO CALIENTE RESERVOIR 7.5 MINUTE SERIES SHEET NUMBER 101 OF 101 Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets. FEET North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 12. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle. QUADRANGLE LOCATION 1 0 KILOMETERS INDEX TO ADJOINING 7.5 MAPS